QUANTIFYING THE PARAMETERS OF SUCCESSFUL AGRICULTURAL PRODUCERS

A Dissertation

by

GREGORY HERMAN KAASE

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2006

Major Subject: Agricultural Education

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Approved by:

Chair of Committee,	Alvin Larke, Jr.
Committee Members,	Chanda Elbert
	James Lindner
	Patricia Larke
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ABSTRACT

Quantifying the Parameters of Successful Agricultural Producers.

(May 2006)

Gregory Herman Kaase, B.S., Texas A&M University

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Chair of Advisory Committee: Dr. Alvin Larke, Jr.

The primary purpose of the study was to quantify the parameters of successful agricultural producers. Through the use of the Financial and Risk Management (FARM) Assistance database, this study evaluated economic measures for row-crop producers, livestock producers and diversified producers (farms which can not be classified as primarily crop or livestock).

The sample population for this study was agricultural producers (N=196) who had participated in the Texas Cooperative Extensions FARM Assistance program in the years 2002 to 2004. Financial performance was determined by several financial measures, such as net cash farm income, ending cash reserves, return on assets (ROA), equity growth and working capital.

In addition, information gathered about the FARM Assistance clientele was used to examine the relationship between their demographic backgrounds and their financial success. SPSS was used to calculate frequencies, percentages, means, standard deviations, and administer one-way analysis of variance and independent sample *t*-test.

The major findings of the study showed that the average age of the FARM Assistance participants was 51 years old. A large number of the participants (41.90%)

in the FARM Assistance program had a Bachelor of Science degree. This study also revealed that the mean net cash farm income for the 196 operations was $91,970 with a range from negative $152,990 to $822,610. Row crop producers had a statistically significant higher ProScore index, net cash farm income, and net cash farm income per acre than livestock farms. Producers who started as farm employees had a statistically significant higher ProScore index than producers who started on their own, partnered with a family member, or those who selected other. Finally, producers who had fulltime, off farm employment had a statistically significant lower ProScore index than those producers who had part-time employment or those who did not have an off farm job.

DEDICATION

This dissertation is dedicated to my loving wife, Amy G. Kaase. I was truly blessed to meet Amy in October of 1993. Since that time, she has been my rock that I hold onto when I need strength and support. It was through her encouragement that I gained the will and fortitude to complete this dissertation and a Ph.D. degree in Agricultural Education.

Amy has given me two beautiful daughters, Mason MaKayle and Karli Jade. It is through their eyes that I see the love she has for me. Amy has taught these two precious girls to see the beauty of people by looking into their hearts, and not by looking at their outward appearance. Amy is also the most loving and caring mother that I have ever met. She has worked tirelessly to provide our daughters with everything that they need to be successful in life.

As our journey in life together continues, I am amazed each and every day at the strength she displays. Amy is the one of the hardest working people that I know. Her career as a veterinarian is extremely busy and tiresome, but she somehow always has time for her family and friends. She truly does make our house a home.

Thank you, Amy, for being my best friend and for always being there when I need you. You are all that I could have ever wished for.

I love you.

ACKNOWLEDGEMENTS

I would first like to thank my family for allowing me to pursue this degree. I know I have missed a lot of family time away from my wife Amy, and our two wonderful daughters, Mason and Karli, in order to finish my degree. However, they never once complained and they were always very supportive with hugs and kisses.

I would also like to thank my parents, Herman and Doris Kaase. Their support and love as parents has never been questioned. Through their guidance, they instilled in me the importance of education and always finishing what you started. I would also like to thank my father and mother in–law, Joe and Frances Walzel for their interest in my progress throughout my degree.

I deeply appreciate the guidance and encouragement I received from my committee chairman, Dr. Alvin Larke, Jr. Dr. Larke, has assisted me in every phase of my degree; from acceptance into graduate school, to helping me decide which courses to pursue, to helping me prepare for my final defense. I am truly grateful for the friendship that we have developed over the past four years and I am honored to have met such a wonderful person.

I would also like to thank my other graduate committee members – Dr. James Lindner, Dr. Chanda Elbert, and Dr. Patricia Larke. Their support with my research and coursework has been immeasurable. This committee was always available for questions and concerns that I may have had, as well as being mentors to me without them truly knowing it.

My co-workers deserve a big “thank you” as well. Working with the FARM Assistance team has been a joy. I work with the greatest group of people that a person could ask for. I would specifically like to thank Dr. Steven Klose and Natalie Outlaw. Dr. Klose allowed me to utilize the FARM Assistance database for this research project and assisted me numerous times throughout the writing of this dissertation. Natalie is one of the brightest system analysts that I know. Her assistance with the organization of the data and her ability to answer word processing questions was immeasurable.

Finally, I would like to thank my dear friends Kelly and Sharon Burt. I first met Kelly and Sharon in 1994 when I served as their county extension agent. Since that time, they have grown to be much more than friends, they are considered family. Their love for our two daughters has been amazing and is truly a blessing. It is through Kelly and Sharon that I have learned what giving and helping others is all about.

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CHAPTER I

INTRODUCTION

Background of Study

Agricultural producers often ask themselves what they can do to increase the profitability and performance of their operation. Most producers assume that if they increase yields, profitability and performance will increase as well. This may or may not be the case. Several other financial and production parameters need to be evaluated in order to truly understand what is best for the farm's overall economic success.

Unfortunately, there is no single definition of success. Parameters such as net cash farm income, ending cash reserves, real net worth and debt to assets ratio are often used as indicators of the farm's success. While these are useful financial indicators, it is hard to answer which one of these is the most important to the success of the farm. In addition, there may be other parameters or measures that could be utilized to help evaluate successful agricultural producers. Escalante and Barry (2002) suggest that successful farm business performance is evidenced by significant growth over time in a farm's equity capital. Likewise, Plumley and Hornbaker (1991) categorized farms according to performance measures such as net farm income and management returns. A paper by Langemeier and Morgan (2001) noted that continuous learning is needed in an industry such as production agriculture. They suggested that a producer or farm manager must continually assess his/her operation and know where it stands in relation to others in the industry.

This dissertation follows the style and format of the *Journal of Agricultural Education*.

To help agricultural producers evaluate these existing parameters, the Texas Risk Management Education Program, an educational service program offered by Texas Cooperative Extension through the Department of Agricultural Economics, was designed to provide agricultural producers and agribusinesses with sound decision-making information on alternative production, marketing and financial management strategies. Within the Texas Risk Management Education Program, a state-of-the-art computerized decision-support system was developed in 1997 to assist agricultural producers in making long-term financial and management decisions under risk. This computerized support system is called the Financial And Risk Management Assistance program (FARM Assistance). Through the FARM Assistance program, Extension risk management specialists work one-on-one with producers to provide individualized economic and risk assessment evaluations.

Statement of the Problem

Agricultural professionals have long recognized that differences in managerial ability will result in differences in financial success of farms with similar resource bases under the same production conditions (Ford & Shonkwiler, 1994). One major difference in managerial types is the use of computers or decision support tools. For over a decade, there has been an increasing emphasis on personal computers in farming operations. Many software packages have been developed to suit farm needs, and several studies have revealed farmers are using personal computers more to make management, production, and marketing decisions (Quinlan & Martin, 1990). Even though more and

more agricultural operations are using computers to keep financial and production data, there are still a large number of producers who do not utilize computers as part of their daily record keeping system. The FARM Assistance program not only analyzes a producer's financial and production information, but it also benefits each producer with their record keeping system through the extensive data collection process.

While educators have encouraged record keeping by developing hand record systems and software, how does this information influence routine and strategic decisions (Doye et al., 2000)? Herein lies the problem. What factors or parameters are successful indicators of any given agricultural operation? Also, once certain factors are identified as being more successful than others, how do agricultural producers use these findings to improve their own operations?

Purpose of the Study

The primary purpose of the study is to quantify the parameters of successful agricultural producers. Through the use of the FARM Assistance database, this study will evaluate economic measures for row-crop producers, livestock producers and diversified producers (farms which can not be classified as primarily crop or livestock). Additionally, since the FARM Assistance process requires thorough personal contact with each producer, qualitative data will also be used as an indicator for success. Likewise, this study will determine if off-farm income is an important indication of the financial success of the operation. This study will also investigate farm success with respect to age, level of education, years of experience in production agriculture, size of

operation, use of technology for record keeping, and involvement in Texas Cooperative Extension events and programs.

Specific Objectives

To accomplish the purpose of the study, the following four objectives are established:

1. Collect and report the demographic characteristics of the FARM Assistance participants based upon age, education level, years of experience in production agriculture, off farm employment, technology use and participation in Extension events and programs.
2. Quantify the financial success of 196 individual operations in terms of profitability, liquidity, solvency, and financial efficiency.
3. Evaluate financial success within and across three groups of operations: row crop producers, livestock ranches and diversified farms.
4. Evaluate the statistical relationship between financial success and farm characteristics and structure, demographics, technology use and involvement in Extension programs.

The FARM Assistance Program

Although the FARM Assistance program is relatively new in terms of years being conducted, over 700 individual producer analyses have been completed across the state from 1998 to 2004. Kaase et al. (2003) stated that the program has been able to help producers add to their bottom lines by analyzing the impacts of alternative management plans before the plans are implemented. The resulting database of primary data collected from producers is a rich source of data to use to uncover the most important parameters for business success. Data collected through the FARM Assistance program includes an extensive list of input parameters representing crop and livestock production, size of operation, land lease arrangements, cost of production, asset values, debt structure, farm program information, crop insurance information, and non-farm income and expenses. These input parameters define an operation's current financial performance and position, as well as the framework for projected performance.

Data Collection Procedures

More than 200 agricultural operations have completed the FARM Assistance program from 2002-2004. Of these, 196 agricultural operations will be utilized in this study. Data was collected by one of the eight Extension risk management specialists located throughout the State of Texas. The data collection process generally takes three to four hours for the initial visit. At this time, general production and financial information is collected for the producer's individual operation. Production data, such as planted acres, yields, prices, variable costs and overhead costs, are collected along

with whole farm information such as off-farm income, family living expenses, assets, debts and interest expense.

Once the initial visit has occurred, the Extension risk management specialist enters the data into a FORTRAN decision support system (DSS). This data is then reviewed again with the producer at a second meeting, normally referred to as the Base-check visit. During this one-on-one meeting, the risk management specialist reviews the collected data with the operator, and alternatives are discussed. From this point, the risk management specialist makes corrections to the data, builds the alternatives and returns for the third and final visit. Here, the risk management specialist delivers and reviews the completed FARM Assistance analyses with the producer. From beginning to end, this entire process can range from two – four weeks.

Significance of the Study

There is a need by agricultural producers and economists to determine which financial parameters are indicators of business success in agricultural operations. There is also the ongoing need to identify if increased technology and involvement in educational programs is beneficial in the overall success of the agricultural producer. In addition, the FARM Assistance program has the challenge of motivating producers to utilize the findings from the research to better their agricultural operations.

This study may benefit Texas Cooperative Extension, the FARM Assistance program and agricultural producers by providing insight to which financial parameters should be used as indicators of business success and which parameters are less

significant. Currently the research is lacking in helping producers best utilize the benchmarking capabilities of FARM Assistance.

Operational Definitions

Cost of Production – those cost associated with growing a crop or raising a head of livestock. Generally these costs include variable costs such as seed, fertilizer, insecticide, feed, veterinary and medicine, etc. In addition, overhead cost such as labor, rent, machinery, fuel and interest are included in the cost of production calculation. These costs are normally converted to a per head or per acre value. These costs do not include one-time costs such as hedging gains or losses, gains and losses from the sale of assets or income tax benefits.

Debt to Asset Ratio – measures the amount of debt owed for every dollar of asset.

Diversified Farmers - farmers who rely significantly on both crop and livestock enterprises.

Equity – total assets minus total liabilities. Also known as net worth.

Ending Cash Reserves – total cash on hand at the end of the year.

Financial and Risk Management Assistance (FARM Assistance) – whole farm and ranch computerized decision support system for long-term strategic planning decisions.

Financial Performance – refers to the ability of a business to be productive and generate earnings over a period of time.

Financial Position – refers to the status of a business at a particular time. An analysis of the position of a farm/ranch considers the total assets owned and the total debts owed by the individual, partnership, or corporation.

Livestock Producers – producers who earn more than 75% of their total revenue from livestock activities.

Liquidity – measures the ability of a farm business to meet its short term financial obligations without disrupting the normal operations of business.

Net Cash Farm Income (NCFI) – is the total of all operating cash inflows and outflows. It does not include non-operating items such as family living, taxes, or principal payments on debts.

Net Farm Income – is the same as NCFI but includes adjustments for non-cash items such as changes in inventory storage and depreciation expense.

Net Worth – a measure of the owner's interest or equity in the assets of the business. It is the dollar amount left over if all assets were sold and all debts paid.

Off–farm income – income received from an outside source not associated with the farming operation. Example of off-farm income would include wages from another job unrelated to the farm.

Profitability - measures the extent to which a business generates income from the use of its resources. NCFI or net farm income would be an example of profitability.

Real Net Worth – is the net worth projected for a future year adjusted for anticipated inflation in order to compare its purchasing power to today's dollar.

Row Crop Producers – a producer whose crop enterprise accounts for 75% or more of total receipts.

Solvency – is a comparison of the value of owned assets to the amount of debts owed. Examples of solvency would be debt-to-asset ratio, net worth and real net worth.

Texas Cooperative Extension – the outreach link of Texas A&M University. Texas Cooperative Extension if funded by the federal government (USDA), the state legislators and the local county government. Texas Cooperative Extension serves all 254 counties in Texas through local county extension agents, support staff, and specialist. It is designed to deliver research-based information and educational opportunities to every citizen within the State.

Texas Risk Management Education Program (TRMEP) - program funded by the 75th Texas Legislature to assist Texas farmers and ranchers to better identify sources of risk. The primary effort of the TRMEP was directed toward the creation of the FARM Assistance program.

Conceptual Framework for the Study

The conceptual framework for this study was derived from a review of literature. The primary focus of the study is identifying which financial measures in an agricultural operation should be utilized to determine the success, or lack of success, of a farm/ranch business. This study will also utilize demographic information, which has been collected for the participants in the FARM Assistance database. Because of the uniqueness of this type of study, the literature review upon which the conceptual

framework is formed focuses on Cooperative Extension, adult learning, measuring financial performance and technology improvement related to farming

Assumptions

1. Texas Cooperative Extension specialists collected the data obtained in the FARM Assistance database over a three-year period from 2002 –2004.
2. All FARM Assistance clientele reported accurate and timely production and financial information.
3. The instrumentation used in this study compared financial performance with demographic information.
4. The questionnaire used in this study accurately portrayed the demographics of the FARM Assistance clientele.

Limitations

1. This study measured only the financial performance and demographic information of FARM Assistance clientele in Texas. Other farmers and ranchers were not evaluated.
2. This study was limited to measuring financial performance of FARM Assistance clientele between January 1, 2002 and December 31, 2004.
3. This study was limited to measuring financial performance and demographic information of only single entity operations. Multiple farming/ranching entities were not evaluated.

Delimitations

This study was delimited to 196 agricultural operators participating in the FARM Assistance program from 2002 to 2004 within Texas. Data was collected from the FARM Assistance analyses completed for each of these operators.

Organization of Remainder of the Dissertation

Chapter II includes a review of the literature pertaining to Cooperative Extension, adult learning, measuring financial performance, and technology improvement related to farming. Chapter III outlines the methodology used to conduct this study. Chapter IV provides results of the data analysis, along with a discussion and presentation of the findings. Chapter V contains the summary, conclusions, and recommendations of the study.

CHAPTER II

REVIEW OF LITERATURE

Knowing which financial measures that should be used to indicate the potential success of agricultural producers is questionable. There are many financial measures that are used to identify an agricultural producer's ability to succeed in this field. In addition to this, there are also several qualitative measures, which can be looked at that serve as a bench mark for success. The following review is intended to illustrate how previous literature has provided the theoretical framework for this study. Areas of literature review included: (1) Cooperative Extension; (2) adult learning; (3) measuring financial performance; and (4) technology improvement related to farming.

Cooperative Extension

The Cooperative Extension Service (CES) was developed from a unique series of legislations and Acts passed during the late 1800's and early 1900's. The Morrill Act of 1862 was passed by the United States Congress to establish a "Land-Grant University" in each state to provide education to citizens in agricultural and mechanical fields. Later, the Morrill Act of 1890 was established. This act provided federal funds for historically Black colleges and universities in the south. The Hatch Act of 1887 was enacted to provide funding for research by the land-grant universities. Several research farms were established throughout each state for this type of work to be conducted. In 1914, the Smith-Lever act was signed into law. The Smith-Lever Act of 1914 authorized the establishment of a system of extension services for the diffusion of

practical information relative to agriculture, home economics, and related subjects to rural dwellers (Smith, 1992). This act divided the support of the Cooperative Extension Service into three different partnerships. The three partnerships consist of federal, state and county entities. The federal partnership exists with the United States Department of Agriculture (USDA), the state partnership coincides with the land–grant university, and the county partnership exists with the local government. All three partners provide public funds for the Cooperative Extension Service. The Smith-Lever Act of 1914 was an important step in formalizing a framework for extension as a partnership among state and federal governments as well as universities (Merrett & Walzer, 2004).

Seaman A. Knapp, who is often referred to as the "father" of the Extension Service, developed what is known today as demonstration work. He believed that farmers needed to be directly involved in the operational stages of the demonstration work, rather than just picking up information through pamphlets or demonstration farms operated by the Universities. Knapp's most famous quote: "What a man hears, he may doubt; what he sees, he may possibly doubt; but what he does, he cannot doubt" (Fultz & Schwartz, 2001), is the backbone to our modern day extension demonstration work.

In 1906, the first county agent, W. C. Stallings, was appointed in Smith County, Texas. This hiring was essential for the Extension Services future as it gave credence to the idea that farmers needed persons working with them at the local level if an effective educational program for farmers and their families were to become a reality (Rasmussen, 1989). The first official extension agents employed to serve rural African American communities were hired at Tuskegee and Hampton Institutes in 1906. In 1906, T.M.

Campbell was employed by Tuskegee as the first African American outreach educator in the country. A month later, John B. Pierce of Hampton University filled a similar position in Virginia. Both worked as coordinators within the Negro Extension Program, as they were called at that time (Willis, 2000).

By 1908, there were 157 agents employed in 11 southern states and Knapp proposed the idea of having an agent in every county, to be supported by the USDA, the land grant colleges and the local people (Bay, 1961). When President Woodrow Wilson signed the Smith-Lever Act on May 8, 1914, he called it "one of the most significant and far-reaching measures for the education of adults ever adopted by the government." Its purpose, clearly stated by congress, was "to aid in diffusing among the people of the United States (US) useful and practical information on subjects related to agriculture and home economics, and to encourage the application of the same" (Rasmussen, 1989).

Rasmussen (1989) summed it up by stating "The underlying philosophy of the system was to "help people help themselves" by "taking the university to the people."" This is not always an easy task. Kelsye & Mariger (2004) conducted a comparison study of farmers who do and do not use Cooperative Extension Services (CES). They found that CES users had a median educational level of some college, while non CES uses had a median level of high school graduate. They concluded that farmers who did not know about CES programs were less likely to be land-grant university graduates. Finally, Kelsye & Mariger (2004) stated that the CES should invest more resources to advertise programs and literature using public forums that reach a larger audience than is currently served.

In Texas, the CES has evolved to include more than just the local agricultural county extension agent. Today, the county extension agents are becoming more and more specialized in their unique field of study. Larger counties may have employed in their staff a 4-H agent, an integrated pest management agent, a horticulture agent, as well as a family and consumer science agent who works closely with the Better Living for Texans (BLT) agent. Along these same lines, another set of Extension employees have increased in numbers throughout the years. The Extension specialist works closely with the county extension agents and with the Extension clientele throughout the State. These specialists are generally very knowledgeable about a specific subject matter and their programming efforts are more intensified in this area.

Today, more than 16,500 full-time professional Extension agents and specialist develop and deliver educational programs at the state and county levels (Rasmussen, 1989). These agents and specialist work in four main program areas. These areas are agricultural and natural resources, family and consumer sciences, 4-H and youth development, and community economic development.

Adult Learning

Since Farm Assistance primarily works with farmers and ranchers, all of our clientele have been adult learners. Adult learning theory is critical in the transfer of knowledge from the Extension personnel to the client. Prior to the 1960's, the only primary learning theory utilized was pedagogy. The pedagogical model of education is a set of beliefs. As viewed by many traditional teachers, it is an ideology based on

assumptions about teaching and learning that evolved between the seventh and twelfth centuries in the monastic and cathedral schools of Europe out of their experiences in teaching basic skills to young boys (Knowles, Holton III, & Swanson, 1998, p. 61).

Eduard C. Lindeman was one of the first to inquire about adult education learning. In his 1926 publication "The Meaning of Adult Education," Lindeman laid the foundation for a systematic theory about adult learning and identified several key assumptions about adult learners (Knowles, Holton III, & Swanson, 1998, p.40):

a. Adults are motivated to learn as they experience needs and interests that earning will satisfy: therefore, these are the appropriate starting points for organizing adult learning activities.
b. Adult's orientation to learning is life-centered; therefore, the appropriate units for organizing adult learning are life situations, not subjects.
c. Experience is the richest resource for adults' learning; therefore, the core methodology of adult education is the analysis of experience.
d. Adults have a deep need to be self-directing; therefore, the role of the teacher is to engage in a process of mutual inquiry with them rather than to transmit his or her knowledge to them and then evaluate their conformity to it.
e. Individual differences among people increase with age; therefore, adult education must make optimal provision for differences in style, time, place, and pace of learning.

In the 1950's, Cyril O. Houle began to investigate the process of adult learning. Houle's study of twenty-two subjects was designed to discover primarily why adults engage in continuing education, but it also sheds some light on how they learn (Knowles, et al. 1998, p. 54). The criterion for classifying the individuals into subgroups was the major conception they held about the purposes and values of continuing education for themselves (Knowles, et al. 1998, p. 55).

1. *The goal-oriented learner*. Use education for accomplishing fairly clear-cut objectives. These individuals usually did not make any real start on their continuing education until their middle twenties and after – sometimes much later.
2. *The activity-oriented learner*. These learners take part because they find in the circumstances of the learning a meaning which has no necessary connection – and often no connection at all – with the content or the announced purpose of the activity. These individuals also begin their sustained participation in adult education at the point when their problems or their needs become sufficiently pressing.
3. *The learning-oriented learner*. This learner seeks knowledge for its own sake. Unlike the other types, most learning-oriented adults have been engrossed in learning as long as they can remember. What they do has continuity, a flow and spread, which establish the basic nature of their participation in continuing education.

Andragogy, a term used to define the theory of adult learning, was first brought into the American culture in 1967 by Dusan Savicevic, a Yugoslavian adult educator (Knowles, et al., 1998, p. 58). Knowles later refined this theory and the andragogical model is based on several assumptions that are different from those of the pedagogical model (Knowles, et al., 1998, p. 64-68):

1. *The need to know.* Adults need to know why they need to learn something before undertaking to learn it. Tough (1979) found that when adults undertake to learn something on their own, they will invest considerable energy in probing into the benefits they will gain from learning it and the negative consequences of not learning it. Consequently, on of the new aphorisms in adult education is the first task of the facilitator of learning is to help the learners become aware of the "need to know."
2. *The learners' self-concept.* Adults have a self-concept of being responsible for their own decisions, for their own lives. Once they have arrived at that self-concept they develop a deep psychological need to be seen by others and treated by others as being capable of self-direction. They resent and resist situations in which they feel others are imposing their wills on them.
3. *The role of the learners' experiences.* Adults come into an educational activity with both a greater volume and a different quality of experience from youths. By virtue of simply having lived longer, they have accumulated more experience than they had as youths. But they also have

had a different kind of experience. This difference in quantity and quality of experience has several consequences for adult education.

It assures that in any group of adults there will be a wider range of individual differences than is the case with a group of youths. Hence, greater emphasis in adult education is placed on individualization of teaching and learning strategies. As we accumulate experience, we tend to develop mental habits, biases, and presuppositions that tend to cause us to close our minds to new ideas, fresh perceptions, and alternative ways of thinking.

4. *Readiness to learn.* Adults become ready to learn those things they need to know and be able to do in order to cope effectively with their real-life situations. An especially rich source of "readiness to learn" is the developmental tasks associated with moving from one developmental stage to the next. The critical implication of this assumption is the importance of timing learning experiences to coincide with those developmental tasks.
5. *Orientation to learning.* In contrasts to children's and youths' subject-centered orientation to learning (at least in school), adults are life-centered (or task-centered or problem-centered) in their orientation to learning. Adults are motivated to learn to the extent that they perceive that learning will help them perform tasks or deal with problems that they confront in their life situations. Furthermore, they learn new knowledge,

understandings, skills, values, and attitudes most effectively when they are presented in the contest of application to real-life situations.

6. *Motivation.* While adults are responsive to some external motivators (better jobs, promotions, higher salaries, and the like), the most potent motivators are internal pressures (the desire for increased job satisfaction, self-esteem, quality of life, and the like). Tough (1979) found in his research that all normal adults are motivated to keep growing and developing, but this motivation is frequently blocked by such barriers as negative self-concept as a student, inaccessibility of opportunities or resources, time constraints, and programs that violate principles of adult learning.

In order to fully understand adult learning, we may also need to look at theories on teaching. Robert Gagne believes that teaching means the arranging of conditions that are external to the learner, but he disagrees that learning is a phenomenon which can be explained by simple theories (Knowles, et al. 1998, p. 79). Gagne would be included in the theorists who believe teaching concepts are derived from learning theories about animals and children. Gagne believes that there are eight distinct types of learning, each with its own set of required conditions (Knowles, et al, 1998, p. 79-80).

1. *Type 1: Signal Learning.* The individual learns to make a general, diffuse response to a signal. This is the classical conditioned response of Pavlov.

2. *Type 2: Stimulus-Response Learning*. The learner acquires a precise response to a discriminated stimulus. What is learned is a connection or a discriminated operant, some times called an instrumental response.
3. *Type 3: Chaining*. What is acquired is a chain of two or more stimulus-response connections. The conditions for such learning have been described by Skinner and others.
4. *Type 4: Verbal Association*. Verbal association is the learning of chains that are verbal. Basically, the conditions resemble those for other (motor) chains. However, the presence of language in the human being makes this a special type because internal links may be selected from the individual's previously learned repertoire of language.
5. *Type 5: Multiple Discrimination*. The individual learns to make different identifying responses to as many different stimuli, which may resemble each other in physical appearance to a greater or lesser degree.
6. *Type 6: Concept Learning*. The learner acquires a capability to make a common response to a class of stimuli that may differ from each other widely in physical appearance. He or she is able to make a response that identifies an entire class of objects or events.
7. *Type 7: Principle Learning*. In simplest terms, a principle is a chain of two or more concepts. It functions to control behavior in the manner suggested by a verbalized rule of the form "If A, then B," which, of course, may also be learned as Type 4.

8. *Type 8: Problem solving*. Problems solving is a kind of learning that requires the internal events usually called thinking. Two or more previously acquired principles are somehow combined to produce a new capability that can be shown to depend on a "higher-order" principle.

Carl Rogers is one of the leading theorists who derived their theories of learning primarily from studies of adults. He defines the role of the teacher as that of a facilitator of learning (Knowles, et al., 1998, p. 85). He believes that the facilitator must posses three attitudinal qualities: (1) realness or genuineness, (2) nonpossessive caring, prizing, trust, and respect, and (3) empathic understanding and sensitive and accurate listening (Knowles, et al., 1998, p. 85). Knowles, et al, (1998 p. 85-86) provide Roger's guidelines for a facilitator of learning:

1. The facilitator has much to do with setting the initial mood or climate of the group or class experience. If his own basic philosophy is one of trust in the group and in the individuals who compose the group, then this point of view will be communicated in many subtle ways.
2. The facilitator helps to elicit and clarify the purposes of the individuals in the class as well as the more general purposes of the group. If he is not fearful of accepting contradictory purposes and conflicting aims, if he is able to permit the individuals a sense of freedom in stating what they would like to do, then he is helping to create a climate for learning.
3. He relies upon the desire of each student to implement those purposes which have meaning for him as the motivational force behind significant

learning. Even if the desire of the student is to be guided and led by someone else, the facilitator can accept such a need and motive and can either serve as a guide when this is desired or can provide some other means, such as a set course of study, for the student whose major desire is to be dependent. And, for the majority of students, he can help to use a particular individual's own drives and purposes as the moving force behind his learning.

4. He endeavors to organize and make easily available the widest possible range of resources for learning. He endeavors to make available writings, materials, psychological aids, persons, equipment, trips, audio-visual aids—every conceivable resource which his students may wish to use for their own enhancement and for the fulfillment of their own purposes.

5. He regards himself as a flexible resource to be used by the group. He does not downgrade himself as a resource. He makes himself available as a counselor, lecturer, and advisor, a person with experience in the field. He wishes to be used by individual students and by the group in ways which seem most meaning to them insofar as he can be comfortable in operating in the ways they wish.

6. In responding to expressions in the classroom group, he accepts both intellectual content and the emotionalized attitudes, endeavoring to give each aspect the approximate degree of emphasis which it has for the individual or the group. Insofar as he can genuine in doing so, he accepts

rationalizations and intellectualizing, as well as deep and real personal feelings.

7. As the acceptant classroom climate becomes established, the facilitator is able increasingly to become a participant learner, a member of the group, expressing his views as those of one individual only.

8. He takes the initiative in sharing himself with the group – his feelings as well as his thoughts – in ways which do not demand or impose but represent simply the personal sharing which students may take or leave. Thus, he is free to express his own feelings in giving feedback to students, in his reaction to them as individuals, and in sharing his own satisfactions or disappointments. In such expressions it is his "owned" attitudes which are shared, not judgments of evaluations of others.

9. Throughout the classroom experience, he remains alert to the expressions indicative of deep or strong feelings. These may be feelings of conflict, pain, and the like, which exist primarily within the individual. Here he endeavors to understand these from the person's point of view and to communicate his empathic understanding. On the other hand, the feelings may be those of anger, scorn, affection, rivalry, and the like – interpersonal attitudes among members of the group.

Again he is as alert to these as to the ideas being expressed and by his acceptance of such tensions or bonds he helps to bring them into the open for constructive understanding and use by the group.

10. In his functioning as a facilitator of learning, the leader endeavors to recognize and accept his own limitations. He realizes that he can only grant freedom to his students to the extent that he is comfortable in giving such freedom. He can only be understanding to the extent that he actually desires to enter the inner world of his students.

Since the Farm Assistance program works directly with adults, and andragogy is rooted in the principles of adult learning, it is important to also know some of the concepts within each stage of andragogy. In the self-directed learning stage, Grow (1991) proposed four stages of learning. These are found in Table 1:

Table 1

Grow's Stages in Learning Autonomy

Stage	***Student***	***Teacher***	***Examples***
Stage 1	Dependent	Authority, coach	Coaching with immediate feedback, drill. Informational lecture. Overcoming deficiencies and resistance
Stage 2	Interested	Motivator, guide	Inspiring lecture plus guided discussion. Goal-setting and learning strategies
Stage 3	Involved	Facilitator	Discussion facilitated by teacher who participates as equal. Seminar. Group projects
Stage 4	Self-directed	Consultant, delegator	Internship, dissertation, individual work or self-directed study group

Measuring Financial Performance

Financial performance can be measured several different ways. Providing farmers with an understanding of core farm financial management concepts and the ability to calculate critical financial indicators for the operations, increases overall financial

performance (Jackson-Smith, Trechter, & Splett, 2004). These concepts include solvency, liquidity, profitability, net present value, and capital budgeting. Purdy and Langemeier (1995) discuss how farm financial managers use financial performance measures to assess the profitability, liquidity, solvency and financial efficiency of the businesses. Purdy and Langemeier also state that performance measures can be used as warning signs or indicators that corrective actions are needed to improve the firm's financial position and profitability. The most common measures of profitability include net cash farm income, net farm income, return on assets, return on equity and the profit margin ratio. Liquidity measures are used as an indicator of the firm's ability to meet financial obligations as they come due without disrupting the normal operations of the business (Barry et al., 1995). Liquidity measures most commonly used are ending cash reserves, and working capital. Solvency measures provide an indication of a firm's ability to cover all financial obligations if the firm sold all of its assets. Solvency measures include percent intermediate debt, percent long-term debt, debt-to-asset ratio, and net worth (Purdy and Langemeier, 1995). Finally, financial efficiency measures show the effect small financial changes would have on the overall profit of the business (Kay & Edwards, 1994). These would include operating expense ratio, depreciation expense ratio, and interest expense ratio.

As Haden & Johnson (1989) point out, performance is a subjective term and depends in part upon the time frame considered. Haden and Johnson go on to reveal that Net Cash Farm Income (NCFI) measures positive or negative cash income, but do not

take into account for simple adjustments in inventory. Whereas Net Farm Income (NFI) is an accrual measure that is adjusted for changes in crop and livestock inventories.

Another tool, which is being used to help farmers and ranchers with their financial success, is the use of decision support systems (DSS). One such tool is the FARM Assistance program, which was developed in 1997 when Texas Cooperative Extension was provided funds to develop a pilot risk-management education program. FARM Assistance is founded in stochastic farm-level research methods and delivers powerful analytical capacity to the hands of farmers and ranchers in Texas (Klose & Outlaw, 2005). As Klose & Outlaw (2005) state, although the FARM Assistance analytical model has foundations in previously developed research methods, the scope of the program delivery presented new methodology challenges.

These challenges consist of correlating stochastic yields for multiple crops that are raised on numerous locations. A reality of working with individual farmers is the fact that production occurs on multiple farming units. A typical medium-sized farm is geographically diversified over many miles and 10-20 different locations (Klose & Outlaw, 2005). A second methodology development was needed to analyze the effect of seasonal price changes on a farm. The fact that FARM Assistance was intended to provide a long-range (10-year) financial forecast presented a unique challenge. A stochastic state methodology was developed (Klose, 2001) to incorporate patterns of seasonal futures and cash prices for major crop and livestock markets (Klose & Outlaw, 2005).

Since the FARM Assistance program was the primary decision support system used in the collection of the data for this paper, a brief explanation of the data gathering techniques seems appropriate. The FARM Assistance program was designed as a one-on-one process, where the Extension specialist works closely with the agricultural producer. Interested producers are sent in advance of the first meeting a list of information to collect. Most of the information is readily available from crop insurance agents, the FARM Service Agency, loan officers and accountants.

At the initial meeting, specialists complete a FARM Assistance workbook containing whole farm and unit input sheets (Appendix A) with the client by collecting production and financial information on the entire farming entity. The specialist then enters all the information into the FARM Assistance computer model. The information collected at the initial meeting is used to develop a preliminary baseline projection for the operation. At the second meeting, the extension specialist and the client review the input data, verify preliminary results and develop alternative strategies to be analyzed. Finally, in a third meeting, the specialist delivers and explains the FARM Assistance analysis report.

As Klose & Outlaw (2005) communicate, results and comparisons of alternatives focus on the profitability and feasibility of alternative strategies. Projected distributions of net cash income, net farm income, and net worth illustrate profitability and the operation's retention of profits. When necessary, other measures such as expense-to-receipts ratio or the forecasted return on assets may be included to better describe or explain the financial differences between alternative plans.

Technology Improvement Related to Farming

As reported by Iddings & Apps (1990), a 1987 Successful Farming survey found that 21% of the farmers owned, leased, or shared a computer. Although this number is growing each year, farmers still have not totally adopted this new technology for record-keeping and business planning. Many agricultural producers still admit that they do not totally understand or trust computers, so they continue to keep their books manually. In Iddings & Apps (1990) study, they found that the larger the farm, the more time required for data entry and the more complex the database and spreadsheet design becomes. The demands are often perceived as more costly than the benefits.

Another observation that Iddings & Apps (1990) came across quite frequently was the factor of age of the producer. Many producers actually said it was to difficult to learn because of their age, even among men in their 30s. Other deterrents they found for the lack of computer use were time, experience and management views.

Lasley, Padgitt, & Hanson (2001) rebuff these beliefs by noting that information transfer through evolving PC and Internet technologies is enhancing agricultural marketing strategies and improving possibilities for farm profitability. Hall, Dunkelberger, Ferreira, Prevatt & Martin (2003) studied the diffusion-adoption of personal computers and the Internet in farm business decisions of southeastern beef and peanut farmers. They found that current technology estimates suggest that more American farmers are connecting to the Internet and searching for farm-related business and non-farm information. These findings suggest that PC and Internet usage has become a component of many farm operators' business management tools.

Computers and Internet use are only one small area of technology advancements related to agriculture. Farming practices have evolved considerably throughout U.S. history. In the last 200 years, U.S. farming technology has evolved from an individual, labor-intensive process into a capital-intensive and highly skilled but labor-efficient one (Padgitt, Newton, Penn & Sandretto, 2000). During this time, mules were replaced by tractors, new pieces of tillage equipment were invented, and transportation was improved. All of these advancements in technology allowed farmers to farm more acres with less labor.

Although the current trend in agriculture is for the smaller farms to be taken in by larger, corporate farms, small farms still make up a large portion of our overall agricultural production. According to Steele (1997), small farms make up about 60 percent of all farms. She refers to small farms as those with sales of less than $20,000. Steele (1997) also notes that these small farms remain vital to rural communities and that all segments of the America population are found on small farms. Small farms account for a significant proportion of the production of certain agricultural commodities. Steele (1997) reveals that over 11 percent of cattle, sheep, lambs and wool were sold by small farms. Likewise, about 20 % of hay and tobacco were produced on farms with total sales under $20,000 in 1994.

Operators of small farms often pursue alternative agriculture enterprises to gain a competitive edge in domestic markets. Small-scale farmers use such resources as farmer cooperatives, community-supported agriculture, and farmers' markets to gain access to niche and specialty markets (Steele, 1997). Non-traditional crops and niche markets are

also being utilized by large farming operations. Everyone wants to take advantage of the growing resources available in agriculture.

With the improvements of biotechnology and genetic selection, farmers and ranchers are able to grow higher yielding plants, heavier steers with less intramuscular fat, and disease resistant vegetables. However, all of this increase in production technology doesn't come without its cost. Investments in biotechnology are often risky, expensive, and long-term (King, 2001).

CHAPTER III

METHODOLOGY

The purpose of this study was to quantify the financial performance measures obtained from data collected from FARM Assistance participants. Financial performance was determined by several financial measures, such as net cash farm income, ending cash reserves, return on assets (ROA), equity growth and working capital. A ProScore was also determined for each operation. The ProScore itself is a simple index that allows for a comparison of one producer to another or one producer to a group. The ProScore is capable of comparing farms of different sizes, regions, and types because the score focuses on relative profit, growth, and probabilities instead of absolute values or cash levels (Klose, et al., 2005). The three factors in the FARM Assistance ProScore success index are projected profitability, equity growth and cash flow risk. Profitability is measured by the average return on assets (ROA) for the ten-year projected period. Equity growth is measured by the average projected growth in real equity (real net worth). Finally, the probability of negative working capital is used to measure cash flow risk. A penalty of -0.25 is assessed for excessive cash flow risk. To calculate the ProScore, simply add the percentage ROA and the percentage equity growth, and then subtract one-quarter of the probability of negative working capital (Klose, et al., 2005).

ProScore = ROA + Equity Growth – ¼ Working Capital Risk

In addition, information gathered about the FARM Assistance clientele was used to examine the relationship between their demographic backgrounds and their financial success.

Population

The population of this study included farmers and ranchers from 11 of the 12 Extension districts throughout the State of Texas who completed the FARM Assistance analyses from 2002 - 2004. These Extension districts can be found in Figure 1. In all, 196 agricultural producer's data were utilized for this study. Also, each FARM Assistance producer was surveyed to collect demographic data relating to age, level of education, years of experience in production agriculture, ethnicity, size of operation, use of technology for record keeping, and involvement in Texas Cooperative Extension events and programs

Instrumentation

Data were collected from participants who completed the FARM Assistance analyses between January 1, 2002 and December 31, 2004. Data were collected by one of the eight Extension risk management specialists located throughout the State of Texas. The instrument used to collect the production and financial data were whole farm and unit input sheets (Appendix A). This data collection process generally takes three to four hours for the initial visit. At this time, general production and financial information is collected for the producer's individual operation. Production data, such

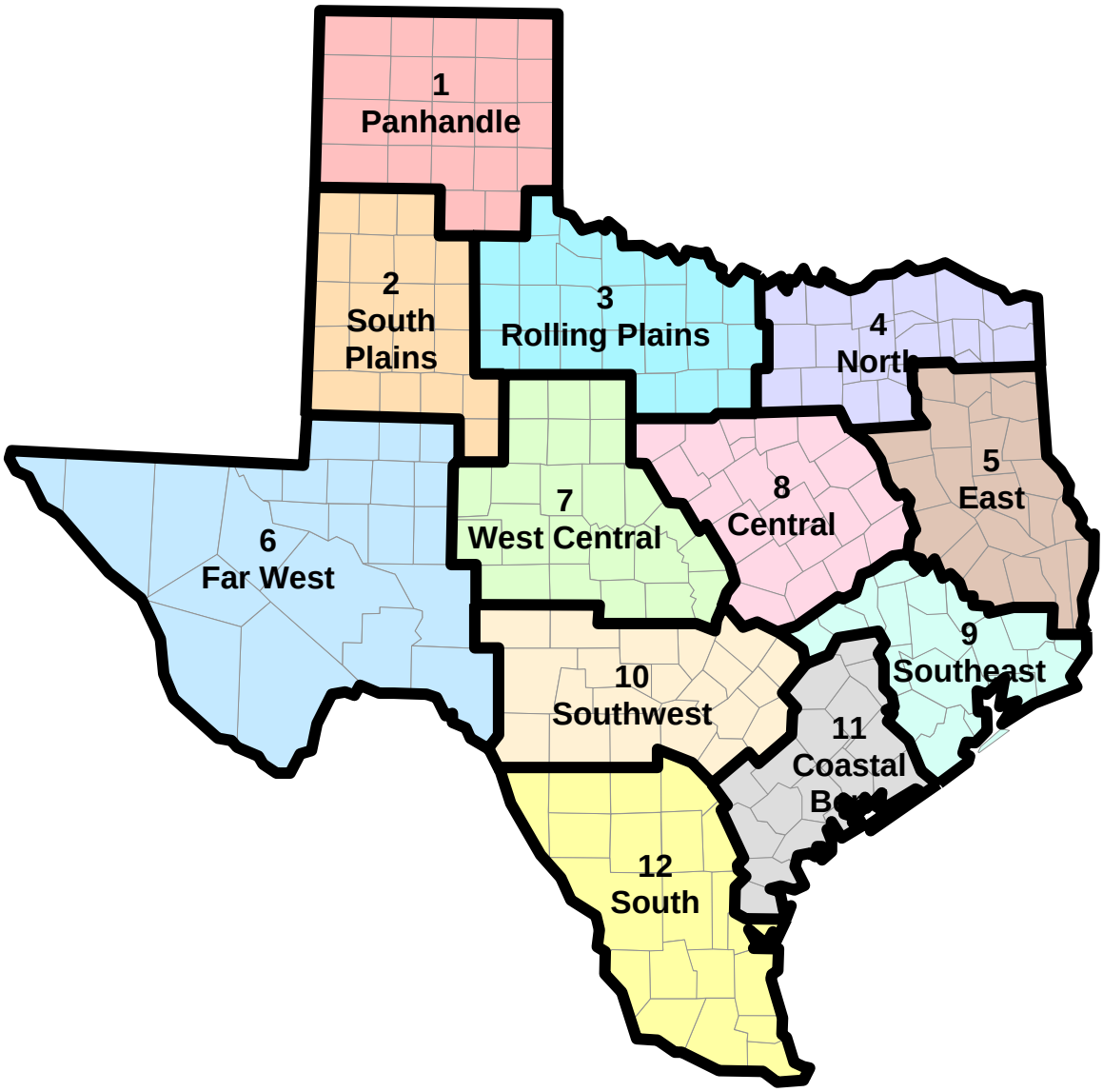

Figure 1. Texas Cooperative Extention Districts

as planted acres, yields, prices, variable costs and overhead costs, are collected along with whole farm information such as off-farm income, family living expenses, assets, debts and interest expense.

The second instrument used in this study was a FORTRAN decision support system (DSS). The data collected by the Extension risk management specialist is entered into this instrument and financial calculations are generated. A sample of this output is enclosed (Appendix B). This data is then reviewed again with the producer at a second meeting, normally referred to as the Base-check visit. During this one-on-one meeting, the risk management specialist reviews the collected data with the operator, and alternatives are discussed. From this point, the risk management specialist makes corrections to the data, builds the alternatives and returns for the third and final visit. Here, the risk management specialist delivers and reviews the completed FARM Assistance analyses with the producer. From beginning to end, this entire process can range from two – four weeks.

To gather demographic information on the FARM Assistance participants, a separate instrument was developed by the Extension risk management specialists (Appendix C). The survey was mailed to the 196 FARM Assistance participants in this study on June 8, 2005. According to Cozby (1993),

> Surveys use self-reported measurement techniques to question people about themselves – their attitudes, behaviors, and demographics. Surveys may employ careful sampling techniques to obtain an accurate description of an entire

population. When scientific sampling techniques are used, the survey results can be interpreted as an accurate representation of the entire population (pp. 56-57).

A follow-up survey by telephone to non-respondents occurred during the week of August 22, 2005. The purpose of this survey was to collect demographic data relating to the following areas:

1. Age of the agricultural producer.
2. Education level of the agricultural producers.
3. Years of experience in production agriculture.
4. How did the producer get started in this profession (i.e. on his/her own, as a partner with a family member, farm employee, etc).
5. Is off-farm income included for the farmer or spouse?
6. Computer/non-computer management of recordkeeping.
7. Participation in Extension events and programs.

The survey procedure used for gathering demographic information follows the procedure outlined in Dillman (2000). Each survey was coded with a unique identification number which was typed on the bottom of the page of the questionnaire. The identification number contained two digits for the extension district they resided in, three digits representing the producer and four digits which represent the year the analysis was performed on the producer. The identification numbers were used to keep track of non-respondents.

Procedure

Before this study was initiated, the FARM Assistance program had been keeping a database of the 700 plus participants who had completed a FARM Assistance analysis from its conception in 1998 through 2004. A Systems Analyst located in College Station who works with the FARM Assistance specialist keeps this database. This database contains deterministic and stochastic financial measures for each of the operations, as well as production costs associated with each crop or livestock entity.

Because the FARM Assistance program deals with a considerable amount of personal finances, the producer and the risk-management specialist complete a Memorandum of Agreement (Appendix D). This Memorandum of Agreement states that all personal financial data and business-sensitive information will remain the exclusive property of the producer. The agreement does state that summaries of the producer's confidential information can be utilized in research, teaching, and extension educational programs as long as the producer's information is aggregated with other cooperators so that the information cannot be identified with the individual.

In order to track participants in the database, each participant was coded with a unique identification number. The identification number contained two digits for the extension district they reside in, three digits representing the producer, and four digits which identify the year the analysis was performed. The demographic survey also contained this identification number on the bottom, right-hand of the survey.

The FARM Assistance database of the 196 participants along with the results from the demographic survey were organized and provided to the investigator in an excel spreadsheet.

Data Analysis

Results of the study were reported using numerical and graphic techniques. Data collected from the survey instruments were entered into a personal computer and analyzed using Statistical Package for Social Sciences® (SPSS). Descriptive statistics including means, percentages, standard deviations, and frequencies were used to describe the demographics and performance variables. Analysis of variance and independent sample t-test were also conducted to determine the statistical relationships between variables. Alpha for all statistical procedures was set *a priori* at .05. These results are presented in Chapter IV.

CHAPTER IV

FINDINGS AND DISCUSSIONS

The purpose of this study was to quantify the parameters of successful agricultural producers. More specifically, which financial measures should be used to indicate the potential success of agricultural producers? Through the use of the FARM Assistance database, this study evaluated economic measures for row-crop producers, livestock producers and diversified producers (farms which could not be classified as primarily crop or livestock). Additionally, qualitative data was used as an indicator for success with respect to age, level of education, years of experience in production agriculture, size of operation, use of technology for record keeping, and involvement in Texas Cooperative Extension events and programs.

The following objectives were identified to accomplish the purposes of the study:

1. Conduct a survey to gather demographic information, technology use and use of Extension program data.

2. Quantify the financial success of 190 plus individual operations in terms of profitability, liquidity, solvency, and financial efficiency.

3. Evaluate financial success within and across three groups of operations:

    A. Row crops

    B. Livestock ranches

    C. Diversified farms

4. Evaluate the statistical relationship between financial success and:

    A. Farm characteristics and structure

    B. Demographics

    C. Technology use

    D. Involvement in Extension programs

The objectives served as a guide for presenting the findings of the study. Information concerning each objective will be presented in separate sections.

Findings Related to Objective 1

Objective 1 was to collect and report demographic information related to the 196 FARM Assistance operations analyzed during 2002 - 2004. This study focused on program participants with farming and ranching operations throughout the State of Texas. Demographic information collected included:

1. Age
2. Education level
3. Years of experience in production agriculture
4. How did the producer get started in production agriculture
5. Did the producer grow up on a farm or ranch
6. Does the producer have an off farm job
7. Does the spouse have an off farm job
8. Is all off-farm income included in this analysis
9. Does the producer use a paid crop marketing advisor
10. Does the producer use a paid crop production consultant
11. How does the producer use a computer for managing the farm or ranch
    - A. Production record keeping
    - B. Financial record keeping
    - C. Checkbook
    - D. Market information (internet)
    - E. Production information (internet)
    - F. Does not use a computer

12. How many households are supported by this farm

13. How active is the producer in Extension events and programs

Of the 196 participants, seventy-one (36.2%) of the participants produced agricultural commodities in District 1. Thirty-two producers (16.3%) farmed or ranched in District 2 and twenty-nine (14.8%) were from District 11. The remaining sixty-four participants (32.6%) operations were in the other 9 Extension Districts. This is outlined in Table 2.

Table 2

Extension Districts in Which the Participants Farm or Ranch

District	*n*	*%*
1	71	36.2
2	32	16.3
3	9	4.6
4	3	1.5
6	13	6.6
7	12	6.1
8	5	2.6
9	1	0.5
10	12	6.1
11	29	14.8
12	9	4.6
Total	196	100.0

Each FARM Assistance participant's operation was categorized either as a row-crop operation, a ranch, or a diversified farm. As illustrated in Table 3, a majority of the participant's operations (62.2%) were row-crop farms. Forty-nine (25.0%) of the operations were classified as ranches, and the remaining twenty-five (12.8%) of the participants had diversified farms (farmers who rely significantly on both crop and livestock enterprises).

Table 3

Number of Row Crop, Livestock, or Diversified Farms

Farm Type	*n*	*%*
Crop	122	62.2
Livestock	49	25.0
Diversified	25	12.8
Total	196	100.0

The size of the farming operation varied greatly among the participants in the FARM Assistance program as indicated in Table 4. Farm size ranged from less than 70 acres to more than 103,000 acres. While 38.8% of the operations (n=76) farm size were greater than 2,751 acres, 11.2% of the participants (n=22) had operations of 500 acres or less. In addition, 17.9% of the operations (n=35) farmed 501–1,250 acres as well as 17.9% of the operations (n=35) farmed 1,251–2,000 acres. The remaining 14.3% of the operations (n=28) had a farm size of 2,001- 2,750 acres.

Table 4

Size of Farming Operation

Farm Size in Acres	*n*	*%*
< 500	22	11.2
501 – 1250	35	17.9
1251 – 2000	35	17.9
2001 – 2750	28	14.3
2751 – 5000	38	19.4
5001>	38	19.4
Total	196	100.0

Note. Mean = 4924.39, Median = 2075.00, SD = 11348.45

The age of the FARM Assistance participants ranged greatly, from the twenties to the eighties. As illustrated in Table 5, twenty-four of the participants (16.20%) were between the ages of twenty-three and forty years old. The smallest percentage (9.50%) of participants were from forty-one to forty-five. Twenty-five of the participants (16.90%) were between forty-six and fifty years of age. Twenty-nine of the participants (19.60%) were between fifty-one and fifty-five years of age. Twenty-one of the participants (14.20%) were from fifty-six to sixty years of age. The large percentage of participants (23.60%) reported being greater than sixty.

Table 5

Profile of FARM Assistance Participants by Age

Age	*n*	*%*
23 – 40	24	16.20
41 – 45	14	9.50
46 – 50	25	16.90
51 – 55	29	19.60
56 – 60	21	14.20
61 or above	35	23.60
Total	148	100.00

Note. Mean = 51.84, Median = 52.50, SD = 11.91

Years of experience in production agriculture is reported in Table 6. This value ranged from three years of experience to sixty-seven. Seventeen of the FARM Assistance participants (11.20%), the smallest group, had between zero and ten years of experience. Twenty-two participants (14.50%) reported that they had been in production agriculture between eleven and twenty years. Thirty-seven participants (24.30%) had between twenty-one and thirty years of experience. Forty-three participants (28.30%), the largest group, had between thirty-one and forty years of experience in the production agricultural field, while thirty-three participants (21.70%) reported that they had more than forty years of experience.

Table 6

Years of Experience of FARM Assistance Participants

Years of Experience	*n*	*%*
0 – 10	17	11.20
11 – 20	22	14.50
21 – 30	27	24.30
31 – 40	43	28.30
41 or above	33	21.70
Total	152	100.00

Note. Mean = 30.70, Median = 30.50, SD = 13.84

Education level was another demographic reported by the FARM Assistance participants. Education level categories included: less than high school education, completed high school, completed a technical school, attended but did not receive a college degree, Bachelor of Science degree, Masters degree, or Doctor of Philosophy/ Medical doctor/ Doctor of Veterinarian medicine degree. Table 7 illustrates the breakdown of education level by the respondents. Three participants (1.90%) did not complete a high school education while twenty-six participants (16.80%) completed their high school education. Two participants (1.30%) attended and completed education at a technical school and forty-three participants (27.70%) attended some college but did not graduate with a degree. Sixty-five participants (41.90%) graduated college with a Bachelor of Science degree, while fourteen participants (9.00%) graduated college with a Masters degree. Two Farm Assistance participants (1.30%)

received a Doctor of Philosophy (PhD), Medical doctor (MD) or Doctor of Veterinarian medicine (DVM) degree.

Table 7

Education level of FARM Assistance Participants

Education Level	*n*	*%*
Less than high school	3	1.90
High school degree	26	16.80
Technical school	2	1.30
Some college	43	27.70
Bachelor of Science	65	41.90
Masters Degree	14	9.00
PhD/MD/DVM	2	1.30
Total	155	100.00

Table 8 shows how the producer got started in production agriculture. Categories for this demographic were on their own, as a partner with a family member, as a farm employee, as a partner with a non-family member, and other. Thirty-two participants (20.60%) began their agricultural career on their own. One hundred and four participants (67.10%) started as a partner with a family member. Twelve participants (7.70%) started their production agriculture careers as farm employees, and four

participants (2.60%) started as a partner with a non-family member. Three participants (1.90%) got started in production agriculture by another mean.

Table 8

How FARM Assistance Participants Started in Production Agriculture

Began Career	*n*	*%*
On their own	32	20.60
Partner with family member	104	67.10
Farm employee	12	7.70
Partner with non-family member	4	2.60
Other	3	1.90
Total	155	100.00

The next demographic collected was if the producer grew up on a farm or ranch. Table 9 shows that one hundred and thirty-five participants (86.50%) grew up on a farm or ranch and that the other twenty-one participants (13.50%) reported they did not grow up on farming or ranching operations.

Table 9

FARM Assistance Participants Raised on Farm or Ranch

Place Raised	*n*	*%*
Raised on Farm/Ranch	135	86.50
Not Raised on Farm/Ranch	21	13.50
Total	156	100.00

Tables 10 – 12 indicate if off-farm income is incorporated into the data collected from the FARM Assistant participants. Table 10 illustrates if the participant has any employment other than farming or ranching. This is categorized by fulltime employment, part-time employment, or no other employment other than production agriculture. Twenty-four of the participants (15.40%) have a fulltime job outside of their agricultural operations. Sixteen of the participants (10.30%) reported that they received income from a part-time job, and one hundred and sixteen participants (74.40%) indicated that they received no other employment other than farming or ranching.

Table 10

Off-Farm Employment of FARM Assistant Participants

Off-Farm Employment	*n*	%
Fulltime	24	15.40
Part-time	16	10.30
None	116	74.40
Total	156	100.00

Table 11 looks at if the spouse of the FARM Assistant participant receives income from an off-farm job. Fifty spouses (32.50%) receive off-farm income from a full time job. Twenty-seven spouses (17.50%) receive off-farm income from part-time employment, and seventy-seven spouses (50.00%) do not have an off-farm job.

Table 11

Off-Farm Employment of FARM Assistant Participant Spouses

Off-Farm Employment	*n*	%
Fulltime	50	32.50
Part-time	27	17.50
None	77	50.00
Total	154	100.00

Producers were also asked if any other off-farm income was included in the FARM Assistance analysis. This off-farm income would be income received from something other than an off-farm job. Table 12 indicates that seventy-one producers (45.50%) received off-farm income and that eighty-five producers (54.50%) did not receive off-farm income.

Table 12

Other Off-Farm Income Received by FARM Assistance Participants

Other Off-Farm Income	*n*	*%*
Did Receive Off-Farm Income	71	45.50
Did Not Receive Off-Farm Income	85	54.50
Total	156	100.00

Producers were also asked if they used a paid crop marketing advisor. Table 13 illustrates that the majority of producers (82.10%) do not use a crop marketing advisor while twenty-eight of the producers (17.90%) did pay for a crop marketing advisor.

Table 13

FARM Assistant Participants Use of a Paid Crop Marketing Advisor

Used Crop Marketing Advisor	*n*	*%*
No	128	82.10
Yes	28	17.90
Total	156	100.00

As a follow up question to using a paid crop marketing advisor, Table 14 indicates if the FARM Assistant participants utilized a paid crop production consultant. One hundred and two participants (65.40%) indicated that they did not pay for a crop production consultant while fifty-four participants (34.60%) indicated that they did pay for this service.

Table 14

FARM Assistant Participants Use of a Paid Crop Production Consultant

Used Crop Marketing Advisor	*n*	*%*
No	102	65.40
Yes	54	34.60
Total	156	100.00

Computer use for managing the farm or ranch business is shown in Table 15. Of the one hundred and fifty six producers who completed this section of the questionnaire,

seventy-nine producers (50.60%) indicated that they used the computer for production record keeping. One hundred and seventeen producers (75.00%) reported that they used a home computer for financial record keeping and one hundred and one producers (64.70%) utilized a computer for the purpose of a checkbook. Eighty-two participants (52.60%) used computers to gather market information and seventy-five participants (48.10%) used their computers to obtain production information from the internet. A small percentage (16.7%) of the producers did not utilize a computer for farm or ranch management.

Table 15

Computer Use of FARM Assistance Participants

Type of Computer Use	*n*	*%*
Production Record Keeping	79	50.60
Financial Record Keeping	117	75.00
Checkbook	101	64.70
Market Information (Internet)	82	52.60
Production Information (Internet)	75	48.10
No Computer Use	26	16.70

Table 16 outlines how many households are supported by the farm or ranch. Ninety-eight of the participants (63.60%) indicated that the farm or ranch supported only one household. Twenty-eight participants (18.20%) revealed that two households were

supported by the agricultural operation. Seventeen producers (11.00%) noted that the farm or ranch supported three households. Four households were supported by seven Farm Assistant participants (4.50%). There was one participant (0.60%) whose operation supported five households and three participants (1.9%) where the operation supported six households.

Table 16

Number of Households Supported by the Farm or Ranch

Number of Households	*n*	*%*
1	98	63.60
2	28	18.20
3	17	11.00
4	7	4.50
5	1	0.60
6	3	1.90
Total	154	100.00

The final inquiry asked by the demographic questionnaire was how active the participant was in Extension events and programs. Table 17 illustrates these responses. Responses ranged from 1 to 5 with 1 having a very low involvement with Extension events and programs and 5 having a very high involvement with Extension events and programs.

Table 17

Involvement in Extension Events and Programs by FARM Assistant Participants

Degree of Involvement	*n*	*%*
Very Low	23	14.80
Moderately Low	23	14.80
Moderate	41	26.50
Moderately High	40	25.80
Very High	28	18.10
Total	155	100.00

Findings Related to Objective 2

The purpose of objective 2 is to quantify the financial success of the 196 individual operations in terms of profitability, liquidity, solvency, and financial efficiency. Descriptive statistics for each area of financial performance are identified and analyzed. Table 18 presents four key profitability indicators. Profitability measures the extent to which an operation generates income from the use of its resources. These are net cash farm income, net cash farm income per acre, 10 year average return on assets, and net farm income.

Table 18

Profitability Indicators for FARM Assistance Operations (N=196)

Profitability Indicators	*M*	*SD*	*Min.*	*Max.*
Net Cash Farm Income ($1000)	91.97	138.31	(152.99)	822.61
Net Cash Farm Income/Acre	32.70	58.49	(172.97)	519.03
10 Yr Avg ROA	6.85	7.08	(19.25)	24.66
Net Farm Income ($1000)	55.73	108.14	(320.27)	498.41

Net cash farm income is the total of all operating cash inflows and outflows. It does not include non-operating items such as family living, taxes, or principal payments on debts. The mean net cash farm income for the 196 operations was $91,970 with a range from negative $152,990 to $822,610. Net cash farm income/acre is equivalent to net cash farm income, except it allows us to compare profitability on a per acre bases.

The mean net cash farm income per acre was $32.70/acre with ranges from negative $172.97/acre to $519.03/acre. The 10 year average return on assets measures the annual percentage return generated by the productivity of the operation's assets. The mean 10 year average return on assets for the 196 analyses was 6.85%. The lowest 10 year average return on assets was negative 19.25% and the highest was 24.66%. Finally, net farm income, which includes adjustments for non-cash items such as changes in inventory storage and depreciation expense, revealed a mean of $55,733. The range of net farm income was between negative $320,270 and $498,410.

Liquidity measures the ability of a farm or ranch business to meet its short term financial obligations without disrupting the normal operations of the business. Table 19 presents three liquidity variables which were obtained from the 196 participants in this study. These are working capital, ending cash reserves, and probability of refinancing.

Table 19

Liquidity Indicators for FARM Assistance Operations (N=196)

Liquidity Indicators	*M*	*SD*	*Min.*	*Max.*
Working Capital ($1000)	40.79	261.26	(1063.00)	1925.35
Ending Cash Reserves ($1000)	6.48	250.57	(2168.36)	965.22
Probability of Refinancing (%)	36.81	39.61	1	99

Working capital is considered to be cash or cash equivalents available in excess of short term debt obligations. For instance, this would be the cash available after

carryover debt payments and the current years intermediate and long-term debt payments are made. The mean working capital for the 196 FARM Assistance participants was $40,790 with a range from negative $1,063,000 to a positive $1,925,350. Ending cash reserves is the total cash on hand at the end of the year. The mean ending cash reserves value was $6,483 with the minimum value being negative $2,168,360 and the maximum value being $965,220. The probability of refinancing is a variable unique to the FARM Assistance analysis. It measures the likelihood that an individual will not be able to meet all financial obligations in a particular year and thus be forced to refinance or roll over the operating note. The mean probability of refinancing for the 196 participants was 36.81% with a minimum value of 1% and a maximum of 99%.

Solvency is a comparison of the value of owned assets to the amount of debts owed. Table 20 illustrates the two financial measures chosen for this comparison. These are real net worth and the debt-to-asset ratio.

Table 20

Solvency Indicators for FARM Assistance Operations (N=196)

Solvency Indicators	*M*	*SD*	*Min.*	*Max.*
Real Net Worth ($1000)	1050.90	1821.55	(1063.00)	1925.35
Debt-to-Asset Ratio (%)	35.73	27.34	(2168.36)	965.22

Real net worth is a measure of the owner's interest or equity in the assets of the business. It is the dollar amount left over if all assets were sold and all debts paid. The mean real net worth for the 196 participants was $1,050,900. The range of real net worth for all producers identified was between negative $200,780 and $19,912,460.

Table 21 looks at the financial efficiency of the operations. These are measured by the following variables: operating expense to receipts ratio and the interest expense to receipts ratio.

Table 21

Financial Efficiency Indicators for the FARM Assistance Operations (N=196)

Financial Efficiency Indicators	*M*	*SD*	*Min.*	*Max.*
Operating Expense/Receipt Ratio	.77	.25	0	2.44
Interest Expense/Receipt Ratio	.08	.13	0	.89

The operating expense-to-receipt ratio indicates what percentage of the revenues went for operating expenses. For example, if the operating expense-to-receipt ratio was .78, this would mean that for every dollar received, the producer spent $0.78. The mean operating expense-to-receipt ratio for the FARM Assistance participants was .77 with a range from 0 to 2.44. The interest expense-to-receipt ratio indicates what percentage of the revenues was used to finance borrowed capital. The mean interest expense-to-receipt ratio was .08 with a range from 0 to .89.

Findings Related to Objective 3

Objective 3 was to evaluate financial success within and across three groups of operations. This information was collected by FARM Assistance specialist and compiled into the FARM Assistance database. The data used to evaluate the financial success is from the 2004 production year. Information related to this objective is presented in the tables to follow.

To evaluate financial success across the three groups of operations, the first financial measure looked at was ProScore. As stated earlier, the ProScore index = ROA + Equity Growth – ¼ Working Capital Risk. The ProScore for all farm types ranges from -70.95 to 62.26. The mean ProScore was 5.32, with a median of 8.06.

Table 22 looks at the statistical relationship between the ProScore index and Crop farms, Livestock farms, and Diversified farms.

Table 22

ProScore by Farm Type

Farm Type	*n*	*M*[a]	*SD*	*F*	*p*
Diversified	25	.99	21.96	4.99	.01
Crop	122	9.53	25.02		
Livestock	49	(2.94)	24.24		

Note. *M*[a]*=ProScore Index*

As shown in Table 22, there was a statistically significant difference in the ProScore index by crop and livestock farms. Those producers with crop farms (*M*=9.53, *SD*=25.02) had a higher ProScore than livestock farms (*M*=(2.94), *SD*=24.24), *F* (2,193) = 4.99, $p < .05$. There was no statistically significant difference in ProScore by diversified farms (*M*=.99, *SD*=21.96) when compared to crop farms or livestock farms. A reason for diversified farms not being statistically significant different could be because diversified farms contain both crops and livestock in their operation.

Net cash farm income, an indicator of profitability by including all operating cash inflows and outflows, shows similar results as the ProScore index. Table 23 highlights these results. Net cash farm income ranged from a high of $822,610 to a low of negative $152,990. The mean net cash farm income was $91,972 with a median of $55,265.

Table 23

Net Cash Farm Income by Farm Type

Farm Type	*n*	*M*[a]	*SD*	*F*	*p*
Diversified	25	73.79	147.46	3.16	.045
Crop	122	110.62	140.32		
Livestock	49	54.82	121.43		

Note. M[a]*=Net Cash Farm Income ($1000)*

Table 23 indicates that there was a statistically significant difference in the Net cash farm income by crop and livestock farm types. Crop farms (*M*=110.62, *SD* =140.32) had a higher Net cash farm income than livestock farms (*M*=54.82, *SD*=121.43), F (2,193) = 3.16, $p < .05$. Again, there was no statistically significant difference in Net cash farm income by diversified farms (*M*=73.79, *SD*=147.46) when compared to crop farms or livestock farms.

Another way to look at profitability and to take the size of the operation out of the equation would be to compare farm type to net cash farm income/acre. For the 196 producers, the net cash farm income/acre ranges from a high of $519.03/acre to a low of negative $172.97/acre. The mean net cash farm income/acre was $32.70 with a median of $26.25. Table 24 outlines the results of comparing net cash farm income/acre to farm type.

Table 24

Net Cash Farm Income/Acre by Farm Type

Farm Type	*n*	*M*[a]	*SD*	*F*	*p*
Diversified	25	16.97	48.01	9.31	.00
Crop	122	46.01	63.87		
Livestock	49	7.59	35.24		

Note. *M*[a]*=Net Cash Farm Income/Acre*

As shown in Table 24, there was a statistically significant difference in net cash farm income/acre by farm type. The crop farms (*M*=46.01, *SD*=63.87) had higher net cash farm incomes/acre than diversified farms (*M*=16.97, *SD*=48.01) and livestock farms (*M*=7.59, *SD*=35.24), F (2,193) = 9.31, $p < .05$. There was no statistically significant difference between diversified farms and livestock operations.

Solvency, also known as a comparison of the value of owned assets to the amount of debts owed, is another financial indicator of success. Real net worth was the variable used to test the solvency of the three different farm types. Table 25 shows the differences in mean, standard deviation, *F*-test, and significance between real net worth and farm types. All farm types had a mean of $1.05 million with a range from negative $200,780 to $19.91 million.

Table 25

Real Net Worth by Farm Type

Farm Type	*n*	*M*[a]	*SD*	*F*	*p*
Diversified	25	1813.85	4064.55	3.15	.045
Crop	122	845.50	920.13		
Livestock	49	1173.03	1630.73		

Note. *M*[a]*=Real Net Worth ($1000)*

As shown in Table 25, there was a statistically significant difference in real net worth by diversified farms and crop farms. Diversified farms (*M*=1813.85,

SD=4064.55) had a higher real net worth than crop farms (*M*=845.50, *SD*=920.13), *F* (2,193) = 3.15, $p < .05$. There was no statistically significant difference in real net worth by livestock farms (*M*=1173.03, *SD*=1630.73) when compared to diversified and crop farms.

When looking at financial success, it is also important to look at off farm income that is received by the operation from either the owner or his/her spouse. Table 26 illustrates off farm income included by each farm type.

Table 26

Off Farm Income by Farm Type

Farm Type	*n*	*M*[a]	*SD*	%
Diversified	25	8.71	19.56	11.3
Crop	122	10.02	17.86	63.5
Livestock	49	9.89	18.25	25.2
Total	196			100.0

Note. M[a]*=Off farm income ($1000).*

The analysis of variance test showed that there were no statistically significant difference in off farm income by farm type, *F* (2,193) = .054, $p > .05$.

Table 27 shows the average value for various financial factors for operations of different production types. Several interesting factors are revealed. Crop producers have the lowest operating expenses to receipts ratio of .75, while diversified producers have the highest with a 9.59. This would indicate that of the 196 FARM Assistance

analyses be analyzed; row crop producers, on average, are the most efficient producers. When looking at real estate/acre, livestock operations have a considerable higher real estate/acre value of $500,050 compared to crop farms ($275,270) and diversified farms ($384,890). The primary reason for this noticeable difference would be that livestock producers tend to own the majority of the acreage they utilize, while crop producers tend to share lease or cash rent a higher percentage of their production acreage.

When looking at the different farm type's debt structure, the data shows that row crop producers have the highest intermediate debt ($105,760) compared to livestock ($87,980) and diversified ($56,310) farms. Intermediate debt is normally thought of as equipment debt, so it would seem feasible that row-crop producers would be higher in this category. The overall debt/asset ratio is similar between the three farm types. However, livestock operations do have the lowest average debt/asset ratio of 30.21.

Table 27 also indicates that row crop producers, on average, have the highest 10 year average Return on Assets, as well as having the highest 10 year average percent change in real net worth. This same group also has the lowest 10 year average probability of refinancing compared to the diversified and livestock operations.

Table 27

Average Financial Indicators by Farm Type

Financial Indicator	All	Diversified	Crop	Livestock
Number of Farms	196	25	122	49
Operating Exp./Receipts	1.90	9.59	.75	.87
Real Estate/Acre ($1000)	345.44	384.89	275.27	500.05
Long Term Debt ($1000)	180.80	224.07	176.60	169.19
Intermediate Debt ($1000)	87.98	56.31	105.76	87.98
Debt/Asset	35.73	36.09	37.87	30.21
Family Living ($1000)	19.80	21.72	23.28	10.16
10 Yr Avg ROA	6.85	5.00	8.43	3.87
10 Yr Avg % Change in RNW	4.33	2.22	5.97	1.32
10 Yr Avg Prob of Refinancing	29.98	41.27	26.63	32.56

Findings Related to Objective 4

Objective 4 was designed to evaluate the statistical relationship between financial success and the following criteria: farm characteristics and structure (size, location and type), demographic (age, education level, years experience, how the producer got started in production agriculture, and raised on a farm or ranch), technology use, and involvement in Extension programs. These relationships were analyzed using the one-way analysis of variance test and the independent sample *t*-test.

An analysis of variance was conducted between the ProScore variable and the amount of acres utilized by the FARM Assistance operations. ProScore was set as the dependent variable and the variable acre was the factor or independent variable. This test showed that there was no statistically significant difference in ProScore by acres $F(191,4) = 2.03$, $p > .05$. This same test was also conducted between the ProScore and the Extension districts in which the FARM Assistance participants farmed or ranched. This test was utilized to see if there was a difference in ProScore when compared to the different geographical regions in the State of Texas. This test showed that there was no statistically significant difference in ProScore by Extension districts $F(185,10) = .89$, $p > .05$. Age was the next dependent variable that was compared to the ProScore variable. This analysis of variance test showed similar results as no statistically significant difference was detected in ProScore by age $F(104,43) = 1.39$, $p > .05$. Education level was compared to the ProScore variable by utilizing an analysis of variance test. This test showed no statistically significant difference was detected in ProScore by education level $F(148,6) = 1.99$, $p > .05$.

Table 28 illustrates the differences in mean, standard deviation, *F*-test, and significance between ProScore and how the producer got started in production agriculture. The mean ProScore for these different categories was 4.62 with a range from negative 70.95 to 62.26.

Table 28

ProScore by How the Producer Got Started in Production Agriculture

Began Career	*n*	*M*[a]	*SD*	*F*	*p*
On their own	32	4.45	22.27	4.07	.001
Partner with family member	104	1.13	26.35		
Farm employee	12	33.44	23.89		
Partner with non-family member	4	14.55	6.14		
Other	3	(.07)	3.82		

Note. *M*[a]*=ProScore*

As shown in table 28, there was a statistically significant difference in ProScore by how the producer started his/her career in production agriculture. Those producers who started as farm employees (M = 33.44, SD = 23.89) had higher ProScores than those producers who started on their own (M = 4.45, SD = 22.27), partnered with a family member (M = 1.13, SD = 26.35), or those who selected other (M = (.07), SD = 3.82), $F(150,4) = 4.70$, $p < .05$. There was no statistically significant difference between those

producers who started as farm employees and those who partnered with a non-family member.

Table 29 illustrates the differences in mean, standard deviation, *F*-test, and significance between ProScore and off-farm employment by the producer. The mean ProScore for these different categories was 4.58.

Table 29

ProScore by Off Farm Employment

Began Career	*n*	*M*[a]	*SD*	*F*	*p*
Fulltime	24	(11.33)	31.76	5.78	.004
Part-time	16	10.79	20.09		
None	116	7.03	24.40		

Note. *M*[a]*=Off Farm Employment*

As shown in table 29, there was a statistically significant difference in ProScore by off farm employment. Those producers who had fulltime employment (*M* = (11.33), *SD* = 31.76) had lower ProScores than those producers who had part-time employment (*M* = 10.79, *SD* = 20.09) or those producers who did not have an off farm job (M = 7.03, *SD* = 24.4), $F(153, 2) = 5.78$, $p < .05$. There was no statistically significant difference between those producers who had part-time employment and those who did not have an off-farm job.

By using an independent sample *t*-test, the study discovered there was no statistically significant difference between ProScore and growing up on a farm/ranch or not growing up on a farm/ranch $t(154) = (.98)$, $p > .05$. Likewise, there was no statistically significant difference between ProScore and using a paid crop marketing advisor $t(154) = (.55)$, $p > .05$ as well as ProScore and using a paid crop production consultant $t(154) = (.41)$, $p > .05$.

Technology use was evaluated between ProScore and the use of computers for financial record keeping. An independent sample *t*-test showed that there was no statistically significant difference between these two variables $t(154) = .54$, $p > .05$. This test also showed no statistically significant difference between ProScore and the use of computers for production record keeping $t(154) = .325$, $p > .05$. The demographic questionnaire also asked participants if they used a computer for any management purposes. Although this revealed that 130 of the 156 respondents did use computers, the independent t-test performed for the relationship between ProScore and use of computers for the farm or ranch management showed no statistically significant difference $t(154) = (.61)$, $p > .05$.

Finally, this study looked at the relationship between involvement in Extension programs and activities and the participant's ProScore variable. An analysis of variance was conducted to compare this relationship. This test showed that there was no statistically significant difference in ProScore by the participants involvement in Extension programs and activities $F(150,4) = .485$, $p > .05$.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The primary purpose of this study was to quantify the parameters of successful agricultural producers. By utilizing the Financial and Risk Management (FARM) Assistance database, the following research objectives were identified and established to accomplish the purpose of this study:

1. Collect and report the demographic characteristics of the FARM Assistance participants based upon age, education level, years of experience in production agriculture, off farm employment, technology use and participation in Extension events and programs.
2. Quantify the financial success of 196 individual operations in terms of profitability, liquidity, solvency, and financial efficiency.
3. Evaluate financial success within and across three groups of operations: row crop producers, livestock ranches and diversified farms.
4. Evaluate the statistical relationship between financial success and farm characteristics and structure, demographics, technology use and involvement in Extension programs.

The sample population for this study were FARM Assistance participants (N=196) who completed an analysis between January 1, 2002 and December 31, 2004. To gather the financial information needed for this study, data was collected by one of the eight Extension risk management specialist located throughout the State of Texas.

This information was then entered into a FORTRAN decision support system created specifically for the FARM Assistance program. To gather the demographic information on the FARM Assistance participants, a separate instrument was utilized. This instrument gathered information relating to age, education level, years of experience in production agriculture, off farm employment, computer use, and participation in Extension events and programs.

Summary of Key Findings/Conclusions for Each Objective

Objective One: Key Findings

The first objective was aimed at collecting and reporting the demographic information related to the FARM Assistance operations (*N*=196) analyzed from 2002 – 2004. These variables included age, educational level, years of experience in production agriculture, how the producer got started in production agriculture, did the producer grow up on a farm or ranch, does the producer have an off farm job, does the spouse have an off farm job, is all off-farm income included, does the producer use a paid crop marketing advisor, does the producer use a paid crop production consultant, how does the producer use a computer for managing the farm or ranch, how many households are supported by this farm, and how active is the producer in Extension events and programs. The following demographic information was revealed:

1. The average age for the FARM Assistance participants was 51 years old. The largest category of producers (23.60%) listed their ages as 61 or

above. The smallest category of producers (9.50%) acknowledged their ages as being between 41 – 45 years of age.

2. The majority of the participants (41.90%) in the FARM Assistance program had a Bachelor of Science degree. Only three producers (1.90%) did not finish their high school education.
3. Years of experience in production agriculture ranged from three years to sixty-seven. The largest population (28.30%) had between thirty-one and forty years of experience.
4. The majority of the FARM Assistance participants (67.10%) started their careers in production agriculture as a partner with a family member. Twelve participants (7.70%) started their production agriculture careers as farm employees.
5. One hundred and thirty-five participants (86.50%) grew up on a farm or ranch while the other twenty-one participants (13.50%) did not grow up on farming or ranching operations.
6. A small percentage of participants (15.40%) had off-farm employment classified as fulltime jobs while 10.30% of the participants reported only having part-time employment. One hundred and sixteen producers (74.40%) stated they did not have any jobs outside of their agricultural careers.
7. The question regarding spouse's employment showed that seventy-seven spouses (50.00%) did not have any off farm jobs.

8. One hundred and twenty-eight FARM Assistance participants (82.10%) did not utilize a paid crop marketing advisor and one hundred and two participants (65.40%) did not utilize a paid crop production consultant.
9. Computer use for managing the farm or ranch operation showed that 50.60% of the participants used a computer for production record keeping. One hundred and seventeen participants (75.00%) used a computer for financial record keeping while 64.70% used a computer for the purpose of a checkbook. Eighty-two participants (52.60%) gathered market information from the internet while 48.10% utilized a computer to obtain production information from internet sources. Only twenty-six producers (16.70%) did not utilize a computer for farm or ranch management.
10. The majority of the participants (63.60%) reported that only one home was supported by the farm or ranch.
11. Participant's involvement in Extension events and programs varied greatly. Twenty-three participants (14.80%) stated that they had a very low involvement, while twenty-eight participants (18.10%) affirmed that they had a very high involvement in Extension programs. Just over twenty-six percent of the participants rated their involvement as moderate.

Objective One: Conclusions

The study population was from eleven of the twelve Texas Cooperative Extension districts in Texas and the majority of the participants were 61 years of age or older. A third of the participants farmed or ranched in Extension district one and sixty-five out of 155 respondents had a Bachelor of Science degree from a four year university.

When looking at years of experience in agriculture, the largest percentage had between thirty-one to forty years of experience. The majority of the participants in this study started their production agricultural career as a partner with a family member, and 86.50% were raised on a farm or ranch. As to off farm employment by the producer, 74.4% of the producers did not have any off farm employment. Likewise, seventy-seven of the 154 respondent's spouses did not have any off farm employment. A large majority of the participants did not use either a paid crop marketing advisor or a paid crop production consultant.

Computer use by the participants was substantial. Only twenty-six of the 156 respondents did not own a computer. One-hundred and nine of the 155 participants indicated that their level of involvement in Extension events and programs was from moderate to very high.

Objective One: Implications

Rasmussen (1989) described the Cooperative Extension Service (CES) as "the underlying philosophy of the system was to "help people help themselves" by "taking the university to the people."" This philosophy is used greatly by the FARM Assistance program. The FARM Assistance program was developed by agricultural economist at Texas A&M University and relies on the risk management specialists to work one-on-one with Extension clientele. Since this program is not mandatory, FARM Assistance participants are perceived as adults who are participating in the program to gain knowledge in order to assist in their own financial stability.

Knowles, Holton III, & Swanson (1998) describe Eduard C. Lindeman's theory about adult learning. Lindeman suggested that adults are motivated to learn when they experience needs. Lindeman also states that individual differences among people increase with age, so the educator will need to make provisions for difference in style, time, place and pace of learning. This theory by Lindeman can be seen in the FARM Assistance clientele. Many seek the service of this program when they feel a need for improving their financial measures or when financial advisors request their participation. Furthermore, because of the wide range of ages by the clientele, FARM Assistance specialist must be unique in their teaching styles and be available to meet with clientele in several different locations and at a wide range of times.

Computer usage by agricultural producers was observed in the Iddings & Apps (1990) study. This study suggested that the demands of data entry for agricultural operations are often perceived as more costly than the benefits. However, Lasley,

Padgitt, & Hanson (2001) disagree. Their study suggested that information transfer through computer and internet technologies is enhancing agricultural marketing strategies and improving possibilities for farm profitability. While this study of the FARM Assistance participants did not show any significant difference between those producers who used a computer and those who did not when looking at their ProScore, it was apparent that the majority of clientele did utilize a computer for a large portion of their farming operation.

As far as program participant's involvement in Extension events and programs, Kelsye & Mariger (2004) suggested that the CES should invest more resources to advertise programs and literature using public forums that reach a larger audience than is currently served. Currently, most Extension programs are advertised through Extension newsletters and the local newspaper. While this type of advertisement and promotion may be adequate for many communities, it may not be effective for all clientele. This study indicated that a large number of clientele rarely engaged in Extension events and programs.

Objective One: Recommendations

Further studies are recommended in these areas: (1) what are the reasons why agricultural producers are (are not) participating in the FARM Assistance program; (2) what are the reasons why FARM Assistance clientele and agricultural producers utilize (do not utilize) the Cooperative Extension Service; (3) how age, education level, and operation size impact computer usage.

Objective Two: Key Findings

The second objective was to quantify the financial success of the 196 individual operations in terms of profitability, liquidity, solvency, and financial efficiency. Descriptive statistics for each area of financial performance were performed and recorded. Profitability indicators analyzed included net cash farm income, net cash farm income per acre, ten year average return on assets, and net farm income. The mean net cash farm income for the 196 operations was $91,970 with a range from negative $152,990 to $822,610. The mean net cash farm income per acre was $32.70/acre with ranges from negative $172.97/acre to $519.03/acre. The mean ten year average return on assets was 6.85% and net farm income revealed a mean of $55,733.

Liquidity indicators analyzed included working capital, ending cash reserves and probability of refinancing. The mean working capital for the 196 FARM Assistance participants was $40,790 while ending cash reserves had a much lower mean of $6,483. The probability of refinancing, which measures the likelihood that an individual will not be able to meet all financial obligations in a particular year, had a mean of 36.81%.

Two solvency indicators were analyzed in this study. These were real net worth and the debt to asset ratio. The mean real net worth for the 196 participants was $1,050,900 which consisted of a 35.73% mean debt to asset ratio.

Operating expense-to-receipt ratio and interest expense-to-receipt ratio were the two indicators looked at to evaluate the financial efficiency of the operations. The mean operating expense-to-receipt ratio for the FARM Assistance participants was .77 and the mean interest expense-to-receipt ratio was .08.

Objective Two: Conclusions

Financial measures of the 196 individual operations from the study were chosen and evaluated across four key areas; these were profitability, liquidity, solvency, and financial efficiency. In terms of profitability, the financial measures studied were net cash farm income, net cash farm income per acre, ten year average return on assets, and net farm income. For liquidity, this study looked at working capital, ending cash reserves and probability of refinancing. The two solvency indicators that were analyzed were real net worth and debt to asset ratio. Finally, the operating expense-to-receipt ratios and the interest expense-to-receipt ratios were calculated to describe the financial efficiency measure.

Objective Two: Implications

Jackson-Smith, Trechter, & Splett (2004) suggest that providing farmers with an understanding of core farm financial management concepts and the ability to calculate critical financial indicators for operations, increases overall financial performance. This belief is one of the main reasons why the FARM Assistance specialists spend so much time collecting and explaining financial measures to their clientele. Purdy and Langemeier (1995) discussed how managers use financial performance measures to assess the profitability, liquidity, solvency and financial efficiency of their businesses. They even conclude that these performance measures can be used as warning signs or indicators that corrective actions are needed to improve the firm's financial position and profitability. FARM Assistance clientele may be aware of their cost of production

figures and the amount of government support they will receive on a yearly basis, but many do not fully understand how all of these financial measures can be interpreted in order to help them make key management decisions for their operations.

Decision Support Systems (DSS) are another tool to help agricultural producers with their financial success. The FARM Assistance program is one such tool. Klose & Outlaw (2005) acknowledge that although the FARM Assistance analytical model has foundations in previously developed research methods, the scope of the program delivery presented new methodology challenges. These challenges consisted of correlating stochastic yields for multiple crops that are raised on numerous locations. Because of these challenges, FARM Assistance specialist must collect individual crop data for each crop being grown on each different location. This additional information collected strengthens the financial results generated for each producer and is then relayed to the clientele through the FARM Assistance report.

Objective Two: Recommendations

Although some FARM Assistance clientele do understand how to interpret financial measures presented in the FARM Assistance analysis, it is apparent that agricultural operators could benefit from more educational trainings regarding the interpretation of financial measures. These trainings could be given to agricultural operators by Extension personnel, loan officers, and financial advisors. Additional studies regarding their adoption and implementation of this knowledge could then be administered.

Objective Three: Key Findings

The third objective was aimed at evaluating financial success within and across three groups of operations. The three groups consisted of row crop, ranches and diversified farms. The financial indicators utilized were the ProScore, net cash farm income, net cash farm income per acre, real net worth, and off farm income. An analysis of variance was used in this test with a .05 level of significance.

Row crop producers (M=9.53, SD=25.02) had a statistically significant higher ProScore than livestock farms (M=(2.94), SD=24.24), $F(2,193) = 4.99$, $p < .05$. Regarding net cash farm income, we find similar results as the ProScore index. Row crop producers (M=110.62, SD=140.32) had a statistically significant higher net cash farm income than livestock producers (M=54.82, SD=121.43), $F(2,193) = 3.16$, $p < .05$. When looking at net cash farm income per acre, the results generated indicated that there was a statistically significant difference by farm type. The crop farms (M=46.01, SD=63.87) had a higher net cash farm income per acre than diversified farms (M=16.97, SD=48.01) and livestock farms (M=7.59, SD=35.24), $F(2,193) = 9.31$, $p < .05$.

The study showed that diversified farms (M=1813.85, SD=4064.55) had a statistically significant higher real net worth than crop farms (M=845.50, SD=920.12), $F(2,193) = 3.15$, $p < .05$. The analysis of variance test did show that there were no statistically significant difference in off farm income by farm type, $F(2,193) = .054$, $p > .05$.

Objective Three: Conclusions

Objective three evaluated financial success across three different groups of operations: row crop producers (*N*=122), livestock producers (*N*=49), and diversified producers (*N*=25). The financial indicators chosen were the producer's ProScore, net cash farm income, net cash farm income per acre, real net worth, and off farm income.

This objective discovered that row crop producers had statistically significant higher ProScores, net cash farm income and net cash farm income per acre than livestock producers. Row crop producers also had a statistically higher net cash farm income per acre than diversified farms.

The data also showed that diversified farms had statistically higher real net worth values than row crop producers. When looking at off farm income for the three different farm types, no difference was found.

Objective Three: Implications

Escalante and Barry (2002) suggest that successful farm business performance is evidenced by significant growth over time in a farm's equity capital. Plumley and Hornbaker (1991) categorize farms according to performance measures such as net cash farm income. The FARM Assistance analysis utilizes these beliefs by evaluating and disseminating some of these same financial variables in each report. FARM Assistance participants have the unique opportunity to study their farm's equity growth over a ten year period, as well as interpreting performance measures throughout this time period.

This objective looked at these measures when comparing three different farm types; row crop, livestock and diversified farms.

Langemeier and Morgan (2001) noted that continuous learning is needed in an industry such as production agriculture. This belief is also reiterated by Knowles, et al., (1998). In Knowles andragogical model, he defines an adult's readiness to learn as a period when the adult needs to learn things in order to cope with real-life situations. This belief reinforces the FARM Assistance ideology. Agricultural producers initiate the FARM Assistance process to assist them with real-life agricultural situations and to better understand their operations financial stability.

Objective Three: Recommendations

Further studies are recommended in these areas: (1) what other financial measures could be evaluated to compare financial success between row crop, livestock, and diversified farms, (2) what, if any, difference would we see among the same farm type but in different geographical locations throughout the State, and (3) what percentage of acreage is owned, cash, or share rented by each of the farm types.

Objective Four: Key Findings

The fourth objective was aimed at determining the statistical relationship between financial success and the following criteria: farm characteristics and structure (size, location and type), demographic (age, education level, years experience, how the producer got started in production agriculture, and raised on a farm or ranch), technology

use, and involvement in Extension programs. The dependent financial variable used for objective four was the ProScore index. Where needed, a one-way analysis of variance or an independent sample *t*-test was used to generate the following results.

The one-way analysis of variance suggested that there was no statistically significant difference in ProScore by acres $F(191,4) = 2.03$, $p > .05$. Likewise, there was no statistically significant difference in ProScore by the Extension district in which the FARM Assistance participant farmed or ranched $F(185,10) = .89$, $p > .05$, the age of the participant $F(104,43) = 1.39$, $p > .05$, or education level $F(148,6) = 1.99$, $p > .05$. The one-way analysis of variance test did show that there was a statistically significant difference in ProScore and how the producer started his/her career in production agriculture. Those producers who started as farm employees ($M = 33.44$, $SD = 23.89$) had higher ProScores than those producers who started on their own ($M = 4.45$, $SD = 22.27$), partnered with a family member ($M = 1.13$, $SD = 26.35$), or those who selected other ($M= (.07)$, $SD = 3.82$), $F(150,4) = 4.70$, $p < .05$. An extremely interesting result was seen in the one-way analysis of variance test conducted between the ProScore index and off farm employment. This test revealed that there was a statistically significant difference in ProScore by off farm employment. Those producers who had fulltime employment ($M = (11.33)$, $SD = 31.76$) had lower ProScores than those producers who had part-time employment ($M = 10.79$, $SD = 20.09$) or those producers who did not have an off farm job ($M = 7.03$, $SD = 24.4$), $F(153,2) = 5.78$, $p < .05$.

An independent sample *t*-test was used to test the relationships between the ProScore index and growing up on a farm/ranch, using a paid crop marketing advisor,

using a paid crop production consultant, and technology use. This test showed that there was no statistically significant difference in these variables. A one-way analysis of variance compared the relationship between ProScore and the participant's involvement in Extension programs and activities. This test showed that there was no statistically significant difference in ProSocre by the participants and their involvement in Extension programs and activities $F(150,4) = .485$, $p > .05$.

Objective Four: Conclusions

Acreage, Extension district, age, and educational level of the FARM Assistance clientele between 2002 and 2004 had no statistically significant difference when comparing the ProScore index. However, how the producer started his/her career in production agriculture did show significant differences in the ProScore index. Also, producers who had fulltime off farm employment showed significantly lower ProScores than those producers who had part-time off farm employment or no off farm employment. No differences were seen in ProScore for producers who did/did not grow up on a farm or ranch, those who utilized a paid crop marketing advisor or a paid crop production consultant, and the adoption technology use. Finally, there was no relationship in ProScore and the participants involvement in Extension program and activities.

Objective Four: Implications

Klose, et al., (2005) stated that the ProScore is capable of comparing farms of different sizes, regions, and types because the score focuses on relative profit, growth, and probabilities instead of absolute values or cash levels. Since this objective was to look at all types of agricultural operations (row crop, livestock, and diversified) and since the FARM Assistance clientele are located in different geographical regions throughout the State, the ProScore Index was used as the one variable to measure financial success.

Ford & Shonkwiler (1994) noted that agricultural professionals have long recognized that differences in managerial ability will result in differences in financial success of farms. The FARM Assistance participants each have their own unique management styles, however, no statistical differences in the ProScore index was seen because of management style in this study.

Objective Four: Recommendations

Further research is recommended to study the effectiveness of utilizing the ProScore index versus other financial variables when comparing demographic data such as size, location, age of producer, education level, experience and technology use.

Recommendations for Action

The following recommendations for actions were developed based on the major findings and conclusions of this study:

1. Because the majority of FARM Assistance operations analyzed were row crop farms (62.2%), the FARM Assistance program should incorporate deliberate attempts at analyzing a higher number of livestock and diversified farms. This action would give a better representation of the agricultural producers in the State of Texas.
2. Since twenty-two of the participants (11.2%) that completed the FARM Assistance analysis indicated the size of their operation as 500 acres or less, more effort should be made to conduct this type of analysis on smaller agricultural operations.
3. Since ethnicity of the producers was not collected by the FARM Assistance specialists, this researcher recommends that this question be added in future data collection procedures. At this point, there is no way of knowing ethnicity demographics.

4. Data collection procedures and explanation of the FARM Assistance analysis to the producers indicate a very intensive one-on-one consultation with the risk management specialist. The researcher feels that this in depth financial information would not be relayed accurately any other way, so this type of method should continue.
5. Because of the magnitude of agriculture in Texas, the researcher recommends asking FARM Assistance clientele their perceived levels of knowledge relating to financial indicators before and after participating in the FARM Assistance program.
6. A significant effort should be undertaken to have more agricultural producers in Extension districts 4, 5, and 9 participate in the FARM Assistance program. These areas had 3, 0, and 1 participants (respectively) represented in this study.

Recommendations for Future Research

The following recommendations are for further research as it relates to this study:

1. Future studies may seek to compare the financial success of crop farms related to the amount of financial support they receive by the government compared to livestock ranches and diversified farms.
2. Future research may seek to ask producers to categorize their agricultural operations as stressed, stable or successful. By knowing the producers perceived success rating, this information could be compared to several financial indicators and correlations could be evaluated.
3. Future studies may involve a comparison of agricultural producers who participated in the FARM Assistance program as well as those who attended other financial trainings. This information may be helpful in knowing which educational activity was most relevant to them.
4. Additional research should be conducted in the area of technology use among agricultural producers. More poignant questions relating to how producers use computers to obtain their educational information would greatly assist how Texas Cooperative Extension develops future educational programs.

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APPENDIX A

Producer: _____
Initial Year of Analysis: _____
First Year Projected: _____

Whole Farm Information

1. First calendar year in planning horizon _____
2. First calendar year that is projected _____
3. Number of management units _____
4. Number of farm machinery items _____
5. The farm has a ____ enterprise (hog, meat goat, mohair, dairy) _____

Form of Business Organization (Card 2)
Sole Proprietor, Partnership/Joint Venture, C-Corp, S-Corp) _____

Partners Draw (Card 55) _____

Acreage *(Card 3)*
1. Total owned crop acres _____
2. Total leased crop acres _____
3. Total owned pasture acres _____
4. Total leased pasture acres _____

Cash Balance *(Card 4-00)*
1. Beginning cash reserves on-hand _____
2. Minimum cash reserve farm must carry _____
3. Fraction of year farm pays interest on total amount of operating note _____
4. Prepaid expenses for first year paid in previous year _____
5. Amount to prepay each year if cash is available _____
6. Amount to invest in FARRM accounts if cash is available _____

Cash Surplus *(Card 4-01) (Card 4-02)*
1. Use of surplus cash at end of year _____
2. Amount to put toward asset/debt _____

NIA Targets *(Card 6)*

Terms for New Loans and Refinancing *(Card 8)*

1. Loan life for refinanced cash flow deficits _____
2. Loan life for new and refinanced intermediate term debts _____
3. Loan origination fee charged to refinance a cash-flow deficit (fraction of amount refinanced) _____

Environmental Compliance Costs *(Card 9)*

Property Tax *(Card 10)*

1. Annual property taxes _____
2. Annual other taxes (excludes state and federal income tax) _____

Federal and State Income Tax Information *(Card 11)*

1. Number of personal income tax exemptions _____
2. Number of dependent children under 17 _____
3. Income tax filing status _____

Overhead Costs *(Card 13)*

1. Accountant and legal fees _____
2. Unallocated maintenance and repair costs _____
3. Insurance premiums for the farm business _____
4. Miscellaneous fixed costs _____
5. Horse costs for feed, shoes, vet and supplements _____
6. Fraction of total cash receipts paid to management when calculating the return to management _____

Family Consumption Information *(Card 14-00)*

1. Annual non-taxable income _____
2. Maximum annual family living expenses _____
3. Minimum family living expenses _____
4. Family living expense for year 1 _____

Off-Farm Salary Income *(Card 14-01)*

1. Annual off-farm salary income for farmer _____

Spouse Off-Farm Salary Income *(Card 14-02)*

1. Annual off-farm salary income for spouse _____

Hired Labor Cost and Miscellaneous Information *(Card 15)*

1. Annual gross salary including fringe benefits and insurance for all full-time employees _____
2. Number of full-time employees _____

3. Cost of part-time labor _____
4. Total fuel and lube costs (if not included as crop production costs) _____
5. Cost of utilities that are not accounted for in the individual crop costs _____

Cropland and Pastureland Cash Lease Costs *(Card 16)*

Other Farm Income *(Card 21-1-5)* _____

Other Farm Expenses *(Card 21-6-10)* _____

Federal Income Tax Itemized Deductions *(Card 21-11)* _____

Federal Income Tax Credits *(Card 21-12)* _____

Personal Health Insurance Premiums *(Card 21-18)* _____

Charitable Contributions *(Card 21-20)* _____

Local Interest Rates for Year 1 *(Cards 93-96)*
1. Local long term interest rate _____
2. Local intermediate interest rate _____
3. Local operating interest rate _____
4. Local cash reserve interest rate _____

Asset	**Asset 1**	**Asset 2**
1. Description		
2. Beginning market value		
3. Beginning cost Basis		
4. Asset type category (Real Estate, Regular, Tax Deferred, Tax Exempt, SEP)		
5. Growth rate category (Real Estate, Low Risk, Higher Risk, S&P 500 yield)		
6. Growth Rate % for year 1		
7. Annual Contribution		
8. Annual Dividends		
9. Year initially purchased		
10. Year asset is to be liquidated/sold		
11. Where the proceeds are to be spent		
12. Fraction of liquidation proceeds to be spent chosen item		

Asset	**Asset 3**	**Asset 4**
1. Description		
2. Beginning market value		
3. Beginning cost Basis		
4. Asset type category (Real Estate, Regular, Tax Deferred, Tax Exempt, SEP)		
5. Growth rate category (Real Estate, Low Risk, Higher Risk, S&P 500 yield)		
6. Growth Rate % for year 1		
7. Annual Contribution		
8. Annual Dividends		
9. Year initially purchased		
10. Year asset is to be liquidated/sold		
11. Where the proceeds are to be spent		
12. Fraction of liquidation proceeds to be spent chosen item		

Current Debt	**Debt 1**	**Debt 2**
1. Loan Description		
2. Outstanding loan amount		
3. Year Remaining		
4. Fixed or Variable Interest Rate		
5. Long or intermediate term		
6. Rate %		
7. Unit Loan is associated with		
8. Year the loan was originated		
9. Fixed Annual Advanced Principal payments		
10. Year in which the loan is to be paid off		
11. Farm or Non-Farm		

Current Debt	**Debt 3**	**Debt 4**
1. Loan Description		
2. Outstanding loan amount		
3. Year Remaining		
4. Fixed or Variable Interest Rate		
5. Long or intermediate term		
6. Rate %		
7. Unit Loan is associated with		
8. Year the loan was originated		
9. Fixed Annual Advanced Principal payments		
10. Year in which the loan is to be paid off		
11. Farm or Non-Farm		

1-2	Machinery Item #	Alphanumeric Name	Calendar year the machine was placed into use	Current market value of the machinery item	Current market value of a replacement machine	Economic life of the machine on the farm	Number of years to depreciate the machine	Replace machine with a new or used item (0=new; 1=used)	Remaining depreciable value or tax basis	Remaining loan balance if applicable	Years remaining on note	Variable vs. fixed interest (0=variable; 1=fixed)	Loan interest rate	Required down payment fraction for the new item if/when this item is to be replaced	Loan life for financing the new item if/when this item is to be replaced
1	1														
1	2														
1	3														
1	4														
1	5														
1	6														
1	7														
1	8														
1	9														
1	10														
1	11														

Producer: _____

Initial Year of Analysis: _____

First Year Projected: _____

Unit Information

Unit #: _____ **Total Acres:** _____

Unit Description: _____ **Cropland Acres Cash Leased:** _____

County: _____ **Cropland Cash Rental Rate ($/acre):** _____

Landlord Guaranteed Rev.: _____ **Pasture Land Cash Leased:** _____

Pasture Cash Rental Rate ($/acre): _____

Marketing Data

Marketing Data	**Crop:** _____	**Crop:** _____	**Crop:** _____
Beginning Inventory			
Number of Years Crop Can Be Stored			
What to do with Surplus……..			
Circle Sell if crop surplus is sold.	**Sell**	**Sell**	**Sell**
Circle Store if crop surplus is stored. **If Stored, indicate maximum stocks.**	**Store**	**Store**	**Store**
Circle Lost if crop surplus is lost.	**Lost**	**Lost**	**Lost**
Marketing Instructions……			
Circle Normal if crop is marketed using traditional methods.	**Normal**	**Normal**	**Normal**
Circle Marketing Pool if crop is marketed through a pool.	**Marketing Pool**	**Marketing Pool**	**Marketing Pool**
Circle Defer if crop receipts are deferred to the following year. **If Deferred, enter the %, First Year and Last Year that receipts are deferred.**	**Defer** **%:** **First Year:** **Last Year:**	**Defer** **%:** **First Year:** **Last Year:**	**Defer** **%:** **First Year:** **Last Year:**
$ Amount of Receipts Deferred from Previous Year			

Cost, Share, Crop Insurance, & Database Info

Unit Info	Crop:		Crop:	
Planted Acres				
Budgeted Yield (units/acre)				
Actual Yield (units/acre)				
Crop Price				
LDP				
Base Acres				
CCP Yield				
Direct Payment Yield				
Landowner's Share of Production				
Variable Costs	**Cost**	**LL Share %**	**Cost**	**LL Share %**
Seed Cost ($/acre)				
Fertilizer Cost ($/acre)				
Herbicides Cost ($/acre)				
Insecticides Cost ($/acre)				
Fungicides Cost ($/acre)				
Custom Application Cost ($/acre)				
Scouting & Other Costs ($/acre)				
Irrigation Fuel Cost ($/acre)				
Tillage & Harvest Fuel Cost ($/acre)				
Variable Harvesting Cost ($/unit)				
Variable Harvesting Cost ($/acre)				
Boll Weevil Costs ($/acre)				
Labor Costs ($/acre)				
Crop Insurance Information				
Type of Coverage				
Basic Unit vs. Split Unit Insurance				
Yield Coverage				
Price Coverage				
Premium				
Hail Exclusion (Y / N)				
Hail Insurance (Y/N)				

Crop Database Information		
Irrigation Method		
Gene Type		
Planting Pattern		
Purpose		
Practice		
Environmental		

Notes:

Type of Coverage: CAT, APH/MPCI, CRC, IP
Irrigation Method: dry, pivot, furrow, Lepa, side roll, drip, flood, semi-irrigated
Gene Type: None, Bt, Roundup Ready, Bt + Roundup Ready
Planting Pattern: solid, skip row, ultra narrow row
Purpose: commercial, commercial/graze, graze, feed, seed, food

Practice: common, minimum till, no till

Environmental: conventional, organic

Production Cost Category Standardization:

Pix should be included in Herbicide Cost.

Defoliants should be included in Harvest Cost.

Custom Hoeing Charges should be included as Labor Cost.
Crop & Marketing Consulting Charges should be included in Scouting & Other.

Hauling Charges should be included in Harvest Cost.

Technology Fees for seed should be included in Seed Cost.

Producer: _____

Initial Year of Analysis: _____

Unit #: _____

Historical & APH Yields

Historical and APH Yields	Crop:	
Year	**Historical Yield**	**APH Yield**
T-Yield		

Hail Insurance Data

Hail Insurance Data	Crop:	Crop:
Coverage		
Premium		
Frequency		
Severity		
Loss Standard Deviation		
Exclusion		

Summary of Cow/Calf Enterprise

Producer: _____ Unit #: _____ Unit Description: _____

1. Summary of Cattle Data					
Cows	**Fraction or #**	**Years 2-10**	**Bulls**	**Fraction or #**	**Years 2-10**
Mature Cows on Hand Jan. 1 (Card 33-1, CC 27-36)			Mature Bulls on Hand Jan. 1 (Card 34-2, CC 17-26)		
Fraction or # of Culled (Card 33-2, CC 17-26)			Fraction or # of Culled (Card 32-1, CC 77-86)		
Month Culled (optional)			Month Culled (optional)		
Cows that Died in 1 year (Card 32-1, CC 47-56)			Bulls that Died in 1 year (Card 32.1, CC 67-76)		
Needed Replacements (model calculated)			Needed Replacements		
Raise Own Replacements (Y/N) *if yes, see section 3*			Raise Own Replacements (Y/N) *if yes, see section 3*		
Replacements Raised That Entered Herd			Replacements Raised That Entered Herd		
Replacement Heifers Bought (Card 33-4, CC 17-26)			Herd Bulls Bought (Card 34-2, CC 17-26)		
Replacement Cows Bought (Card 34-1, CC 17-26)					
Cows Dec. 31			Bulls Dec. 31		

2. Calf Crop Information					
Annual Calving Percentage (Card 34-5, CC 17-26)		%			
Hiefers Calves	**Fraction or #**	**Years 2-10**	**Bull Calves**	**Fraction or #**	**Years 2-10**
Calves Born (model calculated)			Calves Born (model calculated)		
Calves that Died (after birth & before weaning) (Card 33-1, CC 17-26)			Calves that Died (after birth & before weaning) (Card 33-1, CC 87-96)		
# Held for Replacement (Card 33-3, CC 17-26)			# Held for Replacement (Card 32-1, CC 87-96)		
Calves Sold (model calculated)			Calves Sold (model calculated)		
Month Sold (optional)			Month Sold (optional)		
# Transferred to Stocker or Feedlot (Card 3600, CCC 17-26)			# Transferred to Stocker or Feedlot (Card 3601, CCC 17-26)		

3. Replacement Herd Information					
Hiefers Calves	**Fraction or #**	**Years 2-10**	**Bull Calves (optional)**	**Fraction or #**	**Years 2-10**
Yearling Replacement Heifers Jan. 1 (Card 33-1, CC 47-56)			Yearling Replacement Bulls Jan. 1		
Replacements Culled (low quality) (Card 33-1, CC 37-46)			Replacements Culled		
Month Sold (optional)			Month Sold (optional)		
Bred Replacements Sold (high quality) (Card 33-5, CC 17-26)			Replacements that Died		
Month Sold (optional)			Replacement Bulls that Entered heard (model calculated)		
Replacements that Died (Card 32-1, CC 57-66)					
Replacement Heifers that enter herd (model calculated)					

* Optional - Information can be gathered, but is not entered into the model.

** Model Calculated - check information with calculations the model outputs.

4. Average Sale Weights for Cattle		
	Weight	**Unit**
Weaned Heifers (Card 34-3, CC 17-26)		lb
Weaned Steers (Card 34-4, CC 17-26)		lb
Cull Cows (Card 32-1, CC 17-26)		lb
Cull Bulls (Card 32-1, CC 37-46)		lb
Cull Replacement Heifers (Card 32-1, CC 27-36)		lb
Cull Replacement Bulls		lb
5. Average Prices Received for Cattle		
	Price	**Unit**
Weaned Heifers (Card 35-2, CC 17-26…107-116)		$/lb
Weaned Steers (Card 35-3, CC 17-26…107-116)		$/lb
Cull Cows (Card 35-1, CC 17-26…107-116)		$/lb
Cull Bulls (Card 35-5, CC 17-26…107-116)		$/lb
Bred Replacement Heifers (Card 33-1, 97-106)		$/hd
Cull Replacement Heifers (Card 35-4 CC 17-26…107-116)		$/lb
Cull Replacement Bulls (optional)		$/hd
Fed Cattle (Card 35-6, CC 17-26)		$/lb
6. Average Prices Paid for Replacements		
	Price	**Unit**
Replacement Heifers (Card 33-1, CC 77-86)		$/hd
Mature Cows (Card 33-1, CC 57.66)		$/hd
Mature Bulls (Card 33-1, CC 67-76)		$/hd
7. Cattle Herd Costs of Production		
	Cost	**Unit**
Vet., Medicine & Supplies (Card 32-2, CC 17-26)		$/hd
Marketing (Card 32-2, CC 27-36)		$/hd
Checkoff (Card 32-2, CC 37-46)		$/hd
Salt Mineral (Card 32-2, CC 47-56)		$/hd

Custom (Card 32-2, CC 57-66)		$/hd
Other (Card 32-2, CC 67-76)		$/hd
Hauling (Card 32-2, CC 77-86)		$/hd

8. Annual Feed Requirements for Cattle

Name of Feedstuff Card 23, CC 5-12	**Pounds/Cow/Year** Card 37, CC 17-26	**Price/Unit** Card 27, CC 17-26

9. Cattle Depreciation						
Calendar Year Purchased	**# of Head**	**Bulls or Cows**	**Remaining Basis**	**Depreciation Life**	**Economic Life**	**Original Total Basis**
Card 38-18, CC 37-46	Card 38-18, CC 27-36	Card 38-18, CC 17-26	Card 38-18, CC 47-56	Card 38-18, CC 57-66	Card 38-18, CC 67-76	Card 38-18, CC 77-86

10. Historical Cattle Production and Prices		
Year	**Calf Weight** Card 99, 131, CC 17-26	**Calf Crop %** Card 99, 132, CC 17-26

11. Optional Information - Provide if Available		
Year	**Steer Price**	**Heifer Price**

* Ten years of historical prices are not required as long as your farm prices have demonstrated the same variablility as national prices.

APPENDIX B

Table 7 - A. Base Farm Scenario

INCOME STATEMENT FOR YEARS 2004 – 2013

	2004	2005	2006	2007	2008	2009	2010
CASH INCOME (NET OF SHARE LEASE)							
CASH RECEIPTS FOR CROPS	500,944	497,473	502,624	511,445	519,350	531,405	544,958
DECOUPLED DIRECT PAYMENTS	15,125	15,125	15,125	15,125	15,125	15,125	15,125
DECOUPLED CCPs	4,376	13,568	15,655	15,412	14,199	12,896	11,020
MARKETING LOAN PAYMENTS	17,022	22,207	23,976	24,532	24,650	23,175	19,943
MPCI CROP INSURANCE INDEMNITY	0	0	0	0	0	0	0
OTHERINCOME	20,000	20,000	20,000	20,000	20,000	20,000	20,000
TOTAL CASH RECEIPTS	**557,468**	**568,373**	**577,380**	**586,515**	**593,324**	**602,601**	**611,046**
CASH FARM EXPENSE (NET OF SHARE LEASE)							
CROP PROD & HARVEST COSTS							
SEED COSTS	32,187	32,332	32,571	32,897	33,190	33,478	33,853
FERTILIZER COSTS	59,133	56,271	55,613	56,736	57,621	58,624	60,001
HERBICIDE COSTS	40,930	42,117	42,972	43,440	43,775	44,086	44,584
INSECTICIDE COSTS	41,435	42,637	43,502	43,976	44,315	44,630	45,134
FUNGICIDE COSTS	0	0	0	0	0	0	0
CUSTOM APPLICATION	1,470	1,496	1,529	1,561	1,596	1,631	1,669
SCOUTING & OTHER	3,675	3,740	3,822	3,904	3,989	4,079	4,172
IRRIGATION FUEL COSTS	69,245	65,894	65,123	66,438	67,474	68,649	70,262
FUEL & LUBE COSTS	7,110	6,766	6,687	6,822	6,928	7,049	7,214
HARVESTING COSTS	76,384	73,075	72,608	74,472	76,040	77,780	80,037
CROP INSURANCE PREMIUMS	26,658	26,658	26,658	26,658	26,658	26,658	26,658
BOLL WEEVIL COSTS	5,880	6,051	6,173	6,241	6,289	6,333	6,405
HIRED LABOR COSTS	0	0	0	0	0	0	0
SUB-TOTAL OF PROD COSTS	364,107	357,037	357,257	363,145	367,875	372,996	379,990
CASH RENT FOR CROPLAND	0	0	0	0	0	0	0
RENT PASTURE	0	0	0	0	0	0	0
MANAGEMENT COSTS	0	0	0	0	0	0	0
MANAGEMENT BONUS	0	0	0	0	0	0	0
ADDITIONAL MGMT. COSTS	0	0	0	0	0	0	0
HIRED LABOR COSTS	0	0	0	0	0	0	0
PROPERTY TAXES	6,000	6,083	6,260	6,473	6,724	7,012	7,294
PERSONAL PROPERTY TAXES	0	0	0	0	0	0	0
SALES TAXES FOR INPUTS	0	0	0	0	0	0	0
OTHER TAXES	0	0	0	0	0	0	0
ACCOUNTANT & LEGAL FEES	0	0	0	0	0	0	0
UNALLOCATED MAINTENANCE	29,000	29,516	30,157	30,805	31,480	32,185	32,925
UTILITIES	0	0	0	0	0	0	0

OTHER FUEL & LUBE	0	0	0	0	0	0	0
LIABILITY INSURANCE	5,930	6,036	6,167	6,299	6,437	6,581	6,733
MISCELLANEOUS COSTS	1,400	1,425	1,456	1,487	1,520	1,554	1,589
LESS EXPENSES PREVIOUSLY PAID	0	0	0	0	0	0	0
PLUS PREPAID EXPENSES	0	0	0	0	0	0	0
SUB-TOTAL OF CASH COSTS	406,437	400,097	401,296	408,210	414,036	420,328	428,531
INTEREST ON LONG-TERM DEBT	27,924	27,091	26,200	25,249	30,070	25,472	20,483
INTEREST ON INTERMED. DEBT	0	0	5,655	7,686	6,167	4,506	2,065
INTEREST ON OPERATING DEBT	9,990	11,750	11,134	909	10,241	11,605	13,134
INTEREST ON CARRYOVER DEBT	0	781	0	0	0	0	0
TOTAL CASH EXPENSES	**444,351**	**439,719**	**444,285**	**442,054**	**460,513**	**461,911**	**464,213**
NET CASH FARM INCOME	**113,117**	**128,654**	**133,094**	**144,461**	**132,811**	**140,690**	**146,832**
ACCRUAL ADJUSTMENTS AND DEPRECIATION							
+/- CHANGE IN CROP INVENTORY	0	0	0	0	0	0	0
+/- CHANGE IN DEFERRED RECVBLS	0	0	0	0	0	0	0
+/- CHANGE IN LVSTK INVENTORY	0	0	0	0	0	0	0
+/- CHANGE IN PREPAID EXPENSES	0	0	0	0	0	0	0
+/- CHNG BASE VALU RAISED LVST	0	0	0	0	0	0	0
- BASIS BREEDING LVSTK SOLD	0	0	0	0	0	0	0
+ PURCHASED BREEDING LVSTK	0	0	0	0	0	0	0
- DEPRECIATION	-106,380	-50,810	-58,135	-30,614	-28,970	-28,845	-33,308
NET FARM INCOME	**6,736**	**77,845**	**74,960**	**113,847**	**103,841**	**111,845**	**113,524**
SUMMARY OF RECEIPTS & COSTS PER CROP ACRE							
CASH RECEIPTS ($/ACRE)	382	389	395	402	406	413	419
CASH EXPENSES ($/ACRE)	304	301	304	303	315	316	318
NET CASH INCOME ($/ACRE)	77	88	91	99	91	96	101

APPENDIX C

Producer: _____ **Year:** _____

Demographic Questions for FARM Assistance Participants

1. Age?
2. Education level? (0=Less than High school, 1=High school, 2=Technical school, 3=some college, 4=BS, 5=Masters, 6=PHD/MD/JD, 7=GED)
3. Years of experience in production agriculture?
4. How did you get started? (1 – on your own, 2 – as a partner with family member, 3 – farm employee, 4 – partner with non family member, 5 – other)
5. Did you grow up on a farm or ranch? (Write Yes or No)
6. Does the farmer have an off farm job? (1 – Fulltime, 2 – Part time, 3 – No)
7. Does the spouse have an off farm job? (1 – Fulltime, 2 – Part time, 3 – No)
8. Is all off-farm income included in this analysis? (Write Yes or No)
9. Do you use a paid crop marketing advisor? (Write Yes or No)
10. Do you use a paid crop production consultant? (Write Yes or No)
11. How do you use a computer for managing the farm or ranch? Check all that apply:

    Production record keeping
    Financial record keeping
    Check book
    Market information (Internet)
    Production information (Internet)
    I don't use a computer

12. How many households are supported by the farm?
13. How active are you in extension events and programs? Scale of 1 to 5. (1 -- being very low or first time ever associated with extension and 5 -- being very active).

APPENDIX D

MEMORANDUM OF AGREEMENT
FOR PARTICIPATION IN THE FARM ASSISTANCE PROGRAM

This agreement is by and between the Texas Cooperative Extension of the Texas A&M University System (hereinafter referred to as "Agency") and _____ an agricultural producer in _____ County (hereinafter referred to as "Producer").
Print name

The Agency and the Producer hereby acknowledge that Agency is an agency of the State of Texas and is constrained by state law. As part of its mission, the Agency wants and desires to assist the Producer in analyzing the economics of the operation of his/her farm/ranch and its future strategic position and generate a written report for the Producer.

Producer will pay the Agency a base fee of $_____ for the report, payable upon the initiation of this agreement.

The Agency will develop a baseline analysis and analyses of two additional alternatives to the baseline for the producer's operation, as agreed upon by the Agency. These analyses will consist of multi-year projection of the production and financial outcomes of the operation considering the effects of uncertainty and risk. Additional analyses, other than those described, may be conducted for an additional fee prescribed by the Agency.

All personal financial data and business-sensitive commercial and financial information the Agency received from the Producer will remain the exclusive property of the Producer and will be utilized by the Agency for the completion of the contract. As part of the consideration, Agency agrees to maintain all such information submitted by Producer as confidential to the extent permissible by law. The Agency shall not give any other person or organization, public or private, access to the Producer's confidential commercial or financial information except for third party collaborators that have signed a nondisclosure agreement holding them to the same terms of confidentiality. If disclosure of this information is sought by a third party through an Public Information Act request, Agency will notify the Producer of the Request and seek an opinion from the Office of the Attorney General of the State of Texas pursuant to Section 552.301 of the Texas Government Code that is in support of the Agency's position that this confidential commercial and financial information is exempt from disclosure pursuant to Section 552.110 of the Government Code. So Agency can comply with this obligation, Producer agrees it will provide Agency with specific factual evidence that disclosure of the information would cause competitive harm to Producer. This provision shall survive the termination of this agreement.

The Producer will allow the Agency to use summaries of the Producer's confidential commercial and financial information in research, teaching, and extension educational programs conducted by The Texas A&M University System so long as the Producer's information is aggregated with other cooperators such that the data and information of the Producer cannot be disaggregated or otherwise identified with the individual. In order to maintain confidentiality, a Producer's data will be combined with no less than five other farm/ranch operations for aggregate reporting. Upon written request from the Producer, the Agency will purge the Producer's disaggregated confidential financial information from the Agency's records.

Executed in triplicate this _____day of _____, 20_____.

PRODUCER	TEXAS COOPERATIVE EXTENSION
_____	_____
Signature	Signature
Print Name _____	Print Name _____
Address _____	Address _____
_____	_____
Phone _____	Phone_____

VITA

Gregory Herman Kaase

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Agricultural Education

Education:	B.S., Animal Science, Texas A&M University, 1991 M.Ed., Agricultural Education, Texas A&M University, 1995
Professional Experience:	Extension Specialist – Risk Management Texas Cooperative Extension Agricultural Economics Department Texas A&M University System February 1, 1999 – Present
	County Extension Agent – Agriculture Haskell County Texas Cooperative Extension May 1997 – January 1999
	County Extension Agent – 4-H Brazos County Texas Cooperative Extension August 1994 – May 1997
	County Extension Agent – Assistant Ag. Milam County Texas Cooperative Extension October 1992 – August 1994